A social network analysis of plural transformational leadership in teams: an exploration of its association with team thriving, learning, commitment and interdependence.

Richard George Goater, BA (Hons), Dip Ed, Masters of Ed Man.

This thesis is presented for the degree of Doctor of Philosophy of The University of Western Australia Business School

2020
Thesis Declaration

I, Richard Goater, declare that the PhD thesis entitled A social network analysis of plural transformational leadership in teams: an exploration of its association with team thriving, learning, commitment and interdependence is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes.

This thesis has been completed during the course of this degree and does not breach any ethical rules with regard to the conduct of the research. This work contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma.

Except where otherwise indicated, this thesis is my own work.

Signed

Date: 20th January 2020

Richard Goater
Abstract/summary

Different forms of plural leadership have recently emerged within the various fields of organisational scholarship (Carter & Dechurc 2012; Cullen et al. 2012; Denis, Langley & Sergi 2012) and there has been “a surge of both theoretical and empirical research to explore the possibilities of this new leadership paradigm” (Contractor et al. 2012, p. 994). Many of these contemporary forms are described as group-level, collectively enacted phenomena that are emergent, evolve informally and have a social relational foundation. These processes of plural influence within team structures are considered positive and practical responses by organisations and groups to the evolving milieu of complexity, ambiguity, volatility and uncertainty facing organisations (Carte, Chidambaram & Becker 2006; Fitzsimons, James & Denyer 2011; Hoppe & Reinelt 2010; Neubert 1999; Nicolaides et al. 2014; Ramthun 2013). This is particularly pertinent for Australian schools where there are concomitant challenges to the integration of teamwork and plural leadership to “rebuild the potential of schools” (Pounder 1999, p. 139) and improve student outcomes (Wilhelm 2010).

However, while there is a developing body of literature surrounding the importance of these various forms of plural influence, there remains a “translational gap” (Contractor et al. 2012, p. 994) and a dearth of research that simultaneously examines the primary qualities of plural leadership dynamics in teams (Small & Rentsch 2010). Those characteristic qualities are advanced by foundations expressed within social exchange and social capital theories; both these theories focus attention away from individualistic explanations of leadership and, instead, establish the notion that leadership resides in relational ties connecting individuals. These theories make explicit not only the quality of influence among relationships within groups but also the topology of relational networks and the reciprocity of those exchange relationships.

This research thesis aims to align theoretical and conceptual foundations expressed across a range of plural leadership forms with an operational and empirical expression that captures the topology and primary qualities of plural leadership within teams. This is achieved by exploring plural leadership in teams from a foundation of both theoretical and empirical scholarship in the areas of team, relational, distributed and shared leadership. Plural leadership is examined as a relational phenomenon that occurs both within and through social relationships and networks of influence in teams. The application of social network approaches is well suited to investigating the topology of leadership as a relational phenomenon. (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014; Wang, Waldman & Zhang 2014; Zhu et al. 2018). This approach was used to operationalise plural leadership practice in this study; at the same time this research utilised a transformational leadership instrument to specify the quality of the leadership behaviours that are being shared, distributed and reciprocated within teams.
Using a unique operational definition of plural transformational leadership, this research also aimed to illustrate the effect of plural influence in teams on group level outcomes that included analysis of teamwork, behaviours, attitudes and cognitions. Evidence demonstrated that plural transformational leadership behaviour in teams results in positive and significant relationships with teams thriving, team commitment and learning behaviours. Consequently, this research extends the burgeoning understanding of the relationship between plural transformational leadership behaviours, important team processes and proximal outcomes. Furthermore, findings afford the opportunity to support a small body of research concerning the functionality of effective team processes within schools (Scribner et al. 2007) and constitute an important and unique application of leadership dynamics in school organisations.
# Table of Contents

1 **Leadership as a Group Process** ............................................................................................................................... 7
   1.1 Introduction .......................................................................................................................................................... 7
   1.2 Methodology ..................................................................................................................................................... 13
   1.3 Plan of the Thesis ............................................................................................................................................. 13

2 **Literature Review** .................................................................................................................................................... 16
   2.1 Team Leadership ............................................................................................................................................. 16
   2.2 Team Leaders to Plural Team Leadership ................................................................................................. 24
   2.3 Relational Leadership ..................................................................................................................................... 26
   2.4 Distributed Leadership ................................................................................................................................... 32
   2.5 Shared Leadership ........................................................................................................................................... 37
   2.6 Plural Leadership in Teams ............................................................................................................................. 46
      2.6.1 The central role of social and relational dynamics ................................................................................. 46
   2.7 What is leadership, if it is plural? .................................................................................................................. 48
   2.8 Summary ......................................................................................................................................................... 50
   2.9 Plural Leadership Research: Antecedents, Moderators, Measurement and Outcomes ...................... 51
      2.9.1 Distributed Leadership Research ........................................................................................................... 51
      2.9.2 Research Frameworks .............................................................................................................................. 52
      2.9.3 Distributed Leadership Research Findings .......................................................................................... 57
      2.9.4 Distributed Leadership in Teams ......................................................................................................... 59
      2.9.5 Summary of Distributed Leadership Research .................................................................................... 63
   2.10 The Shared Leadership of Teams ................................................................................................................... 64
   2.11 Shared Leadership in Teams -Conceptual Models and Research Paradigms .................................. 65
      2.11.1 Shared Leadership: Qualitative Research Findings ......................................................................... 69
      2.11.2 Qualitative Research Findings; teams ................................................................................................. 70
   2.12 Shared Leadership; Quantitative Research Focus ...................................................................................... 75
   2.13 A Functional Approach to the Measurement of Shared Leadership in Teams ...................................... 76
   2.14 A Behavioural Approach to the Measurement of Shared Leadership in Teams ....................................... 78
      2.14.1 Behavioural Approach-Shared Leadership Research Findings: Individual Outcomes and Emergent States ......................................................................................................................... 81
      2.14.2 Behavioural Approach-Shared Leadership Research Findings: Group Outcomes and Emergent States ......................................................................................................................... 82
      2.14.3 Behavioural Approach-Shared Leadership Research Findings: Effectiveness and Performance Outcomes ....................................................................................................................... 83
      2.14.4 Behavioural Approach-Shared Leadership Research Findings; Transformational and Empowering Behaviours in Teams ..................................................................................... 88
      2.14.5 Behavioural Approach-Shared Leadership Research Findings: Is Shared Leadership Effective and Does It Produce Useful Outcomes for all Teams? ......................................................................... 90
5.1.3 Direction, Alignment and Commitment ............................................................... 170
5.1.4 Conclusion ............................................................................................................. 175
5.2 Main Study ............................................................................................................................. 176
5.2.1 Descriptive Statistics ............................................................................................. 176
5.2.2 Factor Structure; Assumptions .............................................................................. 177
5.2.3 Factor Structure; Dependent Variables ................................................................. 178
5.2.4 Factor Structure; Independent Variable ................................................................. 180
5.2.5 Data Aggregation .................................................................................................. 181
5.3 Results; Hypothesis testing ............................................................................................. 183
5.3.1 Diagnostic Statistics; Hierarchical Multiple Regression ........................................ 183
5.3.2 Hypothesis One to Four; Hierarchical Multiple Regression Results, Plural Transformational Leadership (lv) .......................................................... 185
5.4 Hypothesis Five and Six; the Associations Between Team Thriving, Team Learning Behaviour and Commitment ................................................................. 188

6 Discussion and Conclusion ................................................................................................. 190
6.1 Overview ................................................................................................................................. 190
6.2 Population Sample ............................................................................................................... 191
6.3 Social Network Measures ................................................................................................. 193
6.4 Key Findings, Plural Forms of Transformational Leadership in Teams, ............... 198
6.4.1 Task Interdependence ............................................................................................. 198
6.4.2 Team Learning Behaviour ..................................................................................... 200
6.4.3 Team Commitment ............................................................................................... 203
6.4.4 Thriving at work..................................................................................................... 207
6.4.5 Thriving at Work and Team Outcomes ................................................................... 210
6.4.6 The Relationship between Thriving at Work and Team Learning Behaviour ....... 210
6.4.7 The Relationship between Thriving at Work and Team Commitment................. 212
6.5 Limitations .............................................................................................................................. 214
6.6 Implications and future research ...................................................................................... 218
6.7 Conclusion .............................................................................................................................. 222

References .................................................................................................................................. 224
List of Appendices
Appendix A: Summary of Team Leadership Research ................................................................. 258
Appendix B: Distributed Leadership Research ............................................................................. 274
Appendix C: Theoretical Research Models and Heuristics ........................................................... 293
Appendix D: Shared Leadership Research .................................................................................... 298
Appendix E: Human Research Ethics Approval – The University of Western Australia .............. 334
Appendix F: Participant Information Form ................................................................................... 335
Appendix G: Invitation to Principals to Participate in Research Project ........................................ 337
Appendix H: Education Department of Western Australia Permission to Approach Principals .... 338
Appendix I: Questionnaire ............................................................................................................ 339
Appendix J: Instruments used to Measure the Dependent Variables ........................................... 346
Appendix K: Preliminary Analysis; Correlation and Covariance of Latent Factors for Thriving and Direction, Alignment and Commitment ........................................................................... 348
Appendix L: Preliminary Analysis; Exemplar Team 1- Social Network Results for Distribution (decentralisation), Density and Reciprocity ......................................................................................... 349
Appendix M: Results of Principal Components Analysis and Confirmatory Factory Analysis for Dependent (Interdependence, Thriving, Team Commitment, Team Learning) and Independent (Transformational Leadership) Variables .......................................................................................................................... 350
Appendix N: Hypothesis One; Descriptive Statistics and Correlations (DV; Task Interdependence) (IV; PTL Density) (5.1) ................................................................................................................... 367
Appendix O: Hypothesis Two: Descriptive Statistics and Correlations (DV; Team Learning) (IV; PTL Density) ........................................................................................................................................ 370
Appendix P: Hypothesis Three; Descriptive Statistics and Correlations (DV; Team Commitment) (IV; PTL Density) .................................................................................................................................... 373
Appendix Q: Hypothesis Four; Descriptive Statistics and Correlations (DV; Team Thriving) (IV; PTL Density) ...................................................................................................................................... 376
Appendix R: Hypothesis Five; Descriptive Statistics and Correlations (DV; Team Learning Behaviours) (IV; Thriving) ............................................................................................................ 379
Appendix S: Hypothesis Six; Descriptive Statistics and Correlations (DV; Team Commitment) (IV; Thriving) ........................................................................................................................................ 380

List of Figures
Figure 2-1: A model of leader performance functions contributing to team effectiveness ........19
Figure 2-2: Distributed Leadership as Work Redesign ................................................................. 54
Figure 2-3: Simplified Job Characteristics Model .......................................................................... 55
Figure 2-4: Team Leadership Cycle; team-level leadership as an outcome of teamwork and team learning ........................................................................................................................................ 56
Figure 2-5: Summary of heuristic frameworks that illustrate plural leadership practices in teams ................................................................. 111
Figure 2-6: An integrated framework of plural leadership practice in teams ................................ 112
Figure 3-1: The primacy of relations within the domains of team distributed and shared leadership ........................................................................................................ 124
Figure 3-2: The primacy of relations within the domains of team distributed and shared leadership ........................................................................................................................................ 125
List of Tables

Table 3-1: Definitions of different forms of plural leadership ............................................................. 117
Table 5-1: Confirmatory Factor Analysis Results for Thriving ............................................................. 170
Table 5-2: Confirmatory Factor Analysis Results for Direction, Alignment and Commitment ..... 171
Table 5-3: Theoretical Subdimensions used to assess Transformational Leadership (Rafferty & Griffin 2004) ........................................................................................................................... 173
Table 5-4: Principal Components Structure of the 12 Transformational Leadership Items .......... 174
Table 5-5: Characteristics of Teams .................................................................................................... 176
Table 5-6: Descriptive Statistics ........................................................................................................ 177
Table 5-7: Assessments of the Suitability of Data for Factor Analysis .............................................. 178
Table 5-8: Summary of the Fit Indices for Dependent and Independent variables ......................... 180
Table 5-9: Descriptive Statistics for AD Scores Measuring Dependent Variables Across 76 Teams .... 182
Table 5-10: Inter-class Correlation Scores for the Aggregation of Dependent, Emergent and Moderator Variables .................................................................................................................................. 183
Table 5-11: Diagnostic Statistics for Multiple Hierarchical Regressions Models ......................... 185
Table 5-12: Hypothesis One; Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to task interdependence in teams (DV; Task Interdependence) .... 186
Table 5-13: Hypothesis Two: Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to team learning behaviour (DV; Team learning behaviour) .... 187
Table 5-14: Hypothesis Three: Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to team commitment (DV; Team Commitment) ...................... 187
Table 5-15: Hypothesis Four: Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to team thriving (DV; Team Thriving) ..................................................... 188
Table 5-16: Hypothesis Five: Hierarchical Multiple Regression Results; Team thriving is positively related to team learning (DV; Team learning behaviour) .................................................................. 189
Table 5-17: Hypothesis Six: Hierarchical Multiple Regression Results; Team thriving is positively related to team commitment (DV; Team commitment) ........................................................................ 189
Table 6-1: Comparison of SNA Measures-Anova Significance Levels ............................................. 195
Table 6-2: Comparison of SNA Measures-Additional Variance in the Dependent Variable and Levels of Significance .................................................................................................................................. 195
Acknowledgements

I am grateful for the expertise and guidance of my supervisor, Professor John Cordery, and thank him for his patience, support and particularly his faith in my ability to develop and successfully conclude this project. Thank you to the Faculty of Business and Graduate Research School staff for their support and direction, as well as providing me the privileged opportunity of participating in this research program.

My thanks are also extended to Mr Gavin Morris, Assistant Director of Evaluation and Accountability, Department of Education WA, for granting permission to conduct on site research and I acknowledge the various headmasters and principals for enabling me to undertake research in their professional communities. Special thanks to the individuals and teams who prioritised time in their busy work schedules to participate in this study.

My sincere thanks to Dr Alethea Rea, Ms Jane Chong, Ms Stacey Wang and Ms Jelena Opacic for critiquing my statistical methodology. Special thanks to Mrs Dee Ripepi for formatting tables and chapter content. I especially acknowledge Ms Sonja Vaswani for patiently and methodically proofreading each chapter and providing professional and accurate feedback, and to Ms Leith Finnie for her considerable expertise and patience proofreading, formatting and reformatting material prior to publication.

My greatest and deepest expression of thanks is to my family, Robyn, Hamish and Claire, for their patience, unwavering support and their acceptance of the hours I was locked in my study, and to my mother, Jillian, for her constant encouragement.
1 Leadership as a Group Process

1.1 Introduction

Many organisations have been impacted by rapid developments in technology, globalisation, the emergence of new markets, the demand for innovation, reform and the deregulation of trade boundaries (Barkema, Baum & Mannix 2002; Bouwmans et al. 2017; Crossan & Olivera 2006; George 2003; Manz & Sims 2001; Oertig & Buergi 2006; Seers, Keller & Wilkerson 2003; Uhl-Bien, Marion & Mckelvey 2007). For these organisations the increasingly networked economies, enterprises, societies and governments have given rise to myriad of opportunities (IBM 2018; KPMG 2016; OECD 2018). However, at the same time, the economic environment in which they operate is substantially more volatile, measurably less certain, increasingly complex and structurally diverse (Drzik 2016; Kosmatos 2017). Consequently, knowledge, creativity, resilience, learning and innovation have become critical commodities and their rapid production and integration are vital to the survival of organisations (Beverborg, Sleegers & Veen 2015; Bouwmans et al. 2017; Gu et al. 2018; Kupers 2018; McCallum et al. 2017; Sun et al. 2016; Walumbwa et al. 2018). Firms that sustain high performance levels and maintain a competitive advantage have replaced hierarchically-based decision making with streamlined expert-based problem solving (Bernstein 2014; Robertson 2015) and have promoted speed, flexibility, adaptability and rapid learning (Child & McGrath 2001; Laloux 2016; Seers, Keller & Wilkerson 2003).

Organisations are looking for and implementing new ways of arranging and coordinating activities in response to these environmental demands (Laloux 2016; Robertson 2015). More horizontal organisational structures have emerged in reply to the demands of knowledge work with new managerial forms including: loosely coupled (Orton & Weick 1990); virtual (Chesbrough & Teece, 1996; Davidow & Malone 1992); holacracy (Robertson 2015); modular (Schilling & Steensma 2001); and networked organisations (Satell 2015). These contemporary configurations have resulted in a growing trend for organisations to place more responsibility on decision making by teams (Laloux 2016; Mathieu et al. 2008; Pearce & Manz 2005; Phelps et al. 2012; Yukl 2006). Teams are considered an important fundamental building block and are instrumental to the implementation of many of the new organisational forms (De Sanctis & Poole 1997; Yukl 2006; Pearce, Yoo & Alavi 2004). Teams are better able to cope with evolving, complex and often ill-defined environments (Horner, 1997); consequently, there has been a rapid uptake of cross functional, virtual and self-managing teams (Bell & Kozlowski 2002; Burke et al. 2006; Cohen & Gibson 2003; Cox, Pearce & Perry 2003; Townsend, DeMarie & Hendrickson 1998). For example, cross functional teams are described as a core substructure
for organising and developing products and processes (Avolio et al. 1996) and they have become the structural mechanisms for collective work within the networked organisation, often supplementing or replacing the vertical structures traditionally supplied by business units, departments or divisions” (De Sanctis & Poole 1997, p. 161).

Not surprisingly, as organisations transition from traditional hierarchical systems to more decentralised and networked team-based structures, the concept of team leadership and the processes that underpin leadership in teams is evolving. These changes determine how people interact and how new organisations function (Drath 2001; Horner 1997). This shift is not without its challenges, however, and problems relating to leadership in teams are often regarded as the principal reasons for the failure of team-based work (Wu & Cormican 2016). Given this context of increasing complexities and ever-accelerating rates of change, it is important to re-evaluate the concept of team leadership.

Team leaders are viewed as critical factors in developing team member capabilities, and in facilitating the processes and emergent states that underlie team effectiveness (Burke et al. 2006; Zaccaro, Rittman & Marks 2001). However, the impact and dynamics of team leadership cannot be understood outside the context of team functioning (Lord et al. 2017; Mathieu et al. 2008; Morgeson, DeRue & Karam 2010; Zaccaro, Rittman & Marks 2001). The team focus separates team leadership models from more general and traditional leadership concepts because the primary focus is on supporting team functions. Team leadership is therefore conceptualised as the process of satisfying team needs in the service of enhancing team effectiveness (Morgeson, DeRue & Karam 2010). This functional view of leadership has traditionally examined the role of the designated team leader or positional leader and focused on the influence of the person and position rather than the process of leadership (Carson, Tesluk & Marrone 2007; Drath, 2001; Goffee & Jones 2006; Horner 1997; Hosking 1988; Seers, Keller & Wilkerson 2003; Uhl-Bien, Marion & McKelvey 2007). These leader-centric approaches view the positional team leader as the sole leadership source while team members are subordinates or followers and receivers (Drath, 2001; Gibb 1954; Gronn 2000; Hosking 1988; Seers, Keller & Wilkerson 2003). This traditional leader-centric approach is reflected in the growing body of team leadership research that explores the team leader’s transformational leadership behaviours (Bass 1999; Braun et al. 2013; Chou et al. 2013; Dionne et al. 2004; Zhang, Cao & Tjosvold 2011). While this way of understanding leadership is not wrong, it is now seen as limiting, especially when the knowledge work that is undertaken within teams is characterised by high levels of complexity and interdependence and there is a growing need for creative, innovative solutions (Bligh, Pearce & Kohles 2006; Drath 2001; Hooker &
Csikszentmihalyi 2003; Pearce 2004; Pearce & Manz 2005). In addition, those in formal leadership roles find the current context and environment requires them to lead upward, laterally and downward (Conger 1993) and learn “to lead in situations where they don't have command authority and where they are neither controlled nor controlling” (Drucker 1993, p. 115).

While a relatively significant proportion of the existing team leadership literature is focused on the role of formal team leaders, it is important to establish that the functional view of team leadership is “deliberately inclusive when it comes to who satisfies these team needs” (Morgeson, DeRue & Karam 2010, p. 8). While different forms of collective leadership in teams may require some additional coordination, “the fundamental leadership behaviours as applied to team members in facilitating team performance would not be different” (Burke et al. 2006 p. 303).

Scholars are turning their attention to the emergent process of leadership in teams, rather than the individual characteristics of the team leader per se. They now view leadership as a collective phenomenon rooted in both social exchange and social capital theories (Bligh, Pearce & Kohles 2006; Burke, Fiore & Salas 2003; Conger & Pearce 2003; Day 2000; Day & Harrison 2007; Day, Gronn, & Salas 2006; Ensley, Hmieleski & Pearce 2006; Horner 1997; Pearce & Conger 2003; Pearce & Manz 2005; Pearce, Manz, & Sims 2008; Pearce & Sims 2000; Pearce & Sims 2002). These theories both conceptualise social topography, as a configuration of social relations and connected positions, and support the premise that exchange relationships generate influence. Social exchange theory endorses the notion that all interpersonal influence develops from relational ties and the pattern of exchange between individuals. It assumes bi-directional or reciprocal exchanges and champions the notion that the quality of social interactions between individuals in groups is enhanced by sharing in leadership (White, Currie & Lockett 2014). Alternatively, social capital theory elicits an understanding of the structure and nature of influence relationships in groups and emphasises the importance of collective participation and joint ownership. These theoretical perspectives have the potential to support a more accurate representation of team leadership practice and interactions that form part of the changing ecology of teams in organisations (Day 2000; Gronn 2002; Spillane et al. 2006; Wageman, Gardner & Mortensen 2012; Yukl 2008).

Despite the group process perspectives, if leadership is not in a leader or done by a leader, how is leadership conceived? What constitutes team leadership and how it is developed are important questions when it comes to developing an understanding of how people can work together in groups or teams to bring leadership into being and improve leadership capacity
Leadership researchers have proposed several different constructs to help explore these important questions. Some of the emerging notions of collective leadership have used competing terminologies to describe specific aspects of the interactive dynamics that occur within teams. These plural leadership forms include some elements of Relational and Team Leadership and Distributed and Shared Leadership research.

This thesis explores the nature of plural team leadership within school organisations. Several scholars have highlighted the crucial role teacher teams play in fostering innovation, adaptation, change, team learning and improvement in schools (Barnett & McCormick 2012; Beverborg, Sleegers & Veen 2015; Bouwmans et al. 2017; Johnson 2003; Koeslag-Kreunen et al. 2018; Main 2012; Meirink 2010; Silins & Mulford 2002; Somech & Drach-Zahavy 2007; Vangrieken et al. 2015; Witziers, Sleegers & Imants 1999). Teams and teaming are described as important avenues to invigorate schools and engender learning and collaboration with the “success of school reform depending in part on the effectiveness of teacher teams” (Park, Henkin & Egley 2005, p.1). While there is a growing understanding of the critical role that leadership plays in the development and support of team processes (Burke et al. 2006; Zaccaro, Rittman & Marks 2001), there is relatively little empirical literature that examines specific conditions, features and dynamics of team leadership practices that enhance team effectiveness in schools (Conley, Fauske & Pounder 2004).

In contrast, transformational school leadership has emerged as an important conceptual model in the field of educational research. The transformational leadership of formal leaders makes a significant contribution to positive work climates, team commitment, self-motivation and job satisfaction (Leithwood & Jantzi 2005; Leithwood & Jantzi 2006). Transformational school leadership also has a strong direct effect on teachers’ perceptions of school conditions, their commitment to change, organisational learning and willingness to change their practices (Beverborg et al. 2015; Chin 2007; Hallinger 2003; Nguni, Sleegers & Denessen 2007). In general, studies have demonstrated that transformational school leadership is positively related to various indicators of school and leadership effectiveness (Leithwood & Jantzi 2005).

These positive associations have been mirrored in broader organisational scholarship, with results of different meta-analysis revealing that transformational leadership behaviours have a relatively high level of positive impact on a range of outcomes (Banks et al. 2016; Derue et al. 2011; Judge & Piccolo 2004; Lowe & Galen 1996; Wang et al. 2011). Consistent with these results are the findings of recent meta-analyses of team leadership. These found that the
transformational leadership behaviours of team leaders were positively associated with team performance outcomes (Burke et al. 2006; Gang et al. 2011). Furthermore, research shows that teams in which members collectively enacted or shared transformational leadership performed better than others (Gupta, Rui & Yayla 2011). Studies have also found that transformational leadership was more beneficial as a shared function and exhibited stronger relationships with team effectiveness compared to shared traditional leadership in teams (Gang et al. 2011).

The present study incorporates the themes and knowledge from the research outlined above and applies it to plural transformational leadership in schools. The research utilises a questionnaire study and quantitative methods to explore a variety of associations between variables outlined in the research questions and hypothesis. In undertaking this procedure, the researcher’s approach adopts a post-positive position and a deductive, empirical evaluation and measurement analysis. This investigation adds support to a small but growing body of empirical research on various forms of plural leadership in teams by conceptualising plural leadership as a relational phenomenon expressed through transformational influence behaviours.

Transformational leadership is built through networked relationships among individuals within teams. Plural transformational leadership occurs when more than one person in a team is identified as affording others, specific influence behaviours, in such a way that they are characterised as “transformational”. These transformational behaviours include inspirational communication, intellectual stimulation, support and personal recognition.

This expression of plural leadership is supported by theoretical foundations expressed in both social exchange and social capital theory. Social exchange theory endorses the contention that exchange relationships, that generate influence and accepted norms of reciprocity, play a central role in the influence process. In addition, it emphasises the importance of the quality of those influence ties and the necessity to understand the structure and patterns of influence relationships. Elements of social capital theory also underline the need for a clear understanding of the relational typology of these transformational influence exchanges. These theories suggest that influence processes are embedded in social interactions and therefore, influence is not limited to an appointed leader.

In contrast to an aggregation approach, this thesis research facilitates network analytics to gauge the degree to which each individual group member engages in transformational leadership processes; transformational leadership is examined as a network in which influence ties are shared, distributed and reciprocated. Consequently, this research answers the call from scholars to examine the processes through which transformational leadership predicts team
outcomes while adding to the wider understanding of the nature of transformational leadership in schools (Leithwood & Jantzi 2005; Wang et al. 2011).

Teams and team leadership are central to this research. This study therefore recognises several theoretical heuristics as important foundations including the work of Burke et al. (2006), Day, Gronn and Salas (2004), Mathieu et al. (2008) and Zaccaro, Rittman and Marks (2001). Plural team leadership is established as “a property of the group and a collective phenomenon that is distributed or shared among different people, potentially fluid, and constructed in interaction” (Denis, Langley & Sergi 2012, p. 212). In this way, plural transformational leadership can be viewed as a product of team experiences and processes, as well as an input to subsequent processes and outcomes. This research presents a series of hypothesised models at a team level that specify an association between plural transformational leadership as an independent variable and several proximal outcomes. In doing so, it aims to extend the work of scholars in the areas of team, relational, distributed and shared leadership by addressing the following research question:

- does plural transformational leadership predict behavioural and affective outcomes at a team level?

A subsidiary component of this aspect of the research was the alignment of an operational measure of plural leadership with elements of its conceptual definition. Consequently, this research also explored the following question:

- do the Social Network Analysis (SNA) measures of density, decentralisation and reciprocity, when used to assess plural transformational leadership, equally predict the proximal behavioural and affective outcomes at a team level?

Finally, this research also provided the opportunity to contribute to the emerging empirical evidence concerning thriving at work (Porath et al. 2012). This positive psychological state is considered crucial for creating and sustaining organisational performance (Walumbwa et al. 2017). The association between thriving at work and team leadership or team processes appears sparse. Consequently, a supplementary component of this research endeavours to address the following research question:

- does thriving at work predict team learning and team commitment outcomes at a team level?
1.2 Methodology

Prior theoretical and empirical work in the areas of team, relational, distributed and shared leadership (Figure 2-5 and Figure 2-6) have informed this research and guided the selection of team level outcomes and the specific leadership instrument. At the same time, scholarship in SNA undertaken by Balkundi and Kilduff (2005), Carson, Tesluk and Marrone (2007), Carter et al. (2015), Chiu, Owens and Tesluk (2016), Ramthun (2013), Seibert, Sparrowe and Liden (2003), Small and Rentsch (2010), Gockel and Werth (2010), Hoppe and Reinelt (2010), Ishikawa (2012), Liu et al. (2014), Martin et al. (2013), Mehra et al. (2006), Meindl, Mayo and Pastor (2002) and Wu and Cormican (2016) has directed the methodology and use of density, decentralisation and reciprocity measures.

The relationships between the independent variable, plural transformational leadership, as demonstrated by the three SNA measures, were used to predict the association with four dependent variables (task interdependence, team commitment, team learning and thriving at work). These hypotheses were tested by separately regressing each of the dependent variables onto the three measures of plural transformational leadership in step two of a hierarchical multiple regression with control variables (team size and average time in the team) being entered in at step one. The relative contribution of the SNA measures provided an understanding of the association between plural transformational leadership and these proximal behaviours, attitudes and cognitions at a team level (Figure 3-2). This research also provided the opportunity to examine the impact of thriving at work in teams and two dependent variables: team commitment and team learning. This analysis was also undertaken using hierarchical multiple regression using the same controls outlined above. Finally, an assessment of the model fit of these regressions along with appropriate tests for reliability and factor structure were independently reported for data obtained from both the pilot sample and the main body of research.

1.3 Plan of the Thesis

This thesis is structured into six chapters. The current chapter introduces the thesis objectives and broad research questions and briefly outlines the plan of the research and the methodology used to answer the main research questions.

Chapter two is divided into three parts. The first establishes plural leadership within the crucible of both team and team leadership scholarship. The second part reviews the theoretical and empirical literature on plural leadership in teams and establishes a conceptual foundation that supports the predictive model of the association between plural transformational leadership
and various behavioural and affective team outcomes. The notion of mutual and reciprocal influence is central to several forms of leadership theory and it represents a unique ontology of leadership practice in teams. Leadership as a jointly shared and created process is repeatedly emphasised in relational, distributed and shared leadership theories. This chapter frames these concepts within the foundation of team dynamics and team leadership with plural leadership defined as an emergent team phenomenon. The third part of chapter two examines the empirical research undertaken in the areas of relational, distributed and shared leadership. This section explores the relationship between different forms of plural leadership and team level outcomes, processes and context. It focuses on issues of measurement and antecedent conditions, emergent states and outcomes that have been found to be associated with individual, team and organisational measures of performance and effectiveness.

The following chapter, chapter three, links the emerging fields of plural leadership with two theoretical foundations, in the form of social exchange theory and social capital theory. This chapter also provides a synthesis of both the conceptual and empirical work associated with the different forms of plural leadership. A topology of plural leadership practice is presented that focuses attention on the primacy of leadership behaviours and relationships set within a broader context of both team processes and team leadership. This topology is extended through the introduction of a research model that describes plural leadership as a contributor of important team processes and outcomes. These relationships are expressed as six hypotheses. The first four test the association between plural transformational leadership and task interdependence, team commitment, team learning behaviours and thriving. SNA is used to explore the relational-structural approach that forms the foundation of plural transformational leadership. Moreover, research also offers the opportunity to contribute to the emerging field of positive organisational scholarship by providing a greater understanding of thriving at work. Two further hypotheses are presented, and each explores the association between thriving at work and two dependent variables, team learning behaviours and team commitment.

The fourth chapter develops the conceptual associations outlined in each of the six hypotheses by describing the methodological approach taken in this research. Each of the specific instruments used to measure the four dependent variables of task interdependence, team commitment, team learning and thriving at work are explained in detail. In addition, a subsidiary aim of this research has involved the exploration of three SNA measures, density, decentralisation and reciprocity. These units of analysis were explained in the context of an SNA perspective. At the same time transformational leadership behaviours were selected to identify
leadership relationships in teams. An inventory of items developed by Rafferty and Griffin’s (2004) were used to measure the density, decentralisation and reciprocity of leadership ties in teams. Finally, this chapter also outlines several control variables used in the analysis and it explains the characteristics of two population samples accessed for the purposes of this research.

The fifth chapter reports results from both a pilot study and the main body of research. This chapter contains two important collections of information. The first references the reliability, structure and construct validation of the various instruments used in this research. These results were highlighted for results for both the pilot study and the key body of research. Secondly, the fifth chapter also outlines the findings of several independent hierarchical multiple regression procedures. Prior to reporting these results, information concerning different statistical assumptions that validated this procedure are described. Hierarchical multiple regression is used to measure the predictive association between the three SNA measures of transformational leadership (density, decentralisation and reciprocity) and the dependent variables (task interdependence, team commitment, team learning behaviours and thriving at work). The results of two additional regression analysis were also conveyed. These were conducted to determine the association between thriving at work and the two dependent variables; team learning behaviours and team commitment.

The final chapter discusses the research findings in relation to both the hypothesised aims and within the context of previous studies of plural leadership and educational scholarship. This concluding chapter highlights the importance of various empirical findings, emphasising the unique contribution afforded by using several SNA measures. These results are assessed within the context of a rigorous review of several methodological and theoretical limitations. Finally, the findings provide a platform to recommend several organisational and managerial initiatives while also establishing the impetus for future research.
2 Literature Review

The following literature review highlights variations in ontological and epistemological approaches that are developed within the conceptual paradigms outlined in the previous chapter. Important foundations underlying these fields of plural leadership are explored to ascertain significant antecedent or contextual factors, processes, emergent states and possible outcomes which may assist in developing a deeper understanding of the team level constructs that view leadership as a developing, collectively enacted phenomenon. Prior to exploring these elements of plural leadership, it is important to place them within the context of team dynamics and the evolving understanding of team leadership activity.

2.1 Team Leadership

Teams have become a ubiquitous element within organisations as systems respond to increasingly complex environments by developing more agile, responsive and leaner team-based structures (Salas, Bedwell, & Weaver, 2008). At the same time, trends in digitalisation and globalisation have significantly modified what scholars might traditionally have defined as a team and teamwork (Salas, Burke & Cannon-Bowers 2000; Wageman, Gardner & Mortensen 2012). Contemporary teams are increasingly characterised as having less stable and more blurred boundaries (Wageman, Gardner & Mortensen 2012). In addition, many teams are progressively experiencing fluid membership with participants coming from geographically dispersed regions who together exhibit less structural and behavioural interdependence (Hackman 2012). Despite this changing nature of teams, scholars have highlighted several core tenets that bind team members and provide a focus for team activity. The central purpose of a team is to perform tasks (Kozlowski & Ilgen 2006). This normative view sees team processes “mediate the linkage between input factors, such as task and the effectiveness of the team” (Kozlowski et al. 1996 p.257). The team’s task therefore forms the source of the group’s goals, roles and exchanges (Kozlowski & Ilgen 2006). Importantly, the tasks that teams perform are invariably driven within the broader context of organisational or environmental demands. As those demands change, teams need to be responsive to ensure appropriate performance outputs. Teams and team members, therefore, need to be able to continually adapt to: different internal demands, that is, changing membership and multiple collaborations; and external demands, which include an increased pace and variety of novel task within dynamic and complex environments (DeRue 2011; Kozlowski et al. 2009; Wageman, Gardener & Mortensen 2012). Finally, teams as groups are social systems (Hackman 2012; Wageman, Gardener & Mortensen 2012). They are made up of members who depend on one another in the completion of collective purposes for which they often develop specialised roles. In addition, as
social systems, teams are identifiable, which suggests that members can be distinguished from non-members and they are capable of interrelating with other individuals or groups as an identifiable unit (Hackman 2012).

Within this increasingly complex backdrop, team leadership entwines three conceptual elements specific to the functioning of teams. These elements examine leadership within a team context by incorporating theoretical discussions that focus on: team processes; the individual actions of the prescribed leader; and the collective actions of team members. Scholars have also focused attention on the cyclical and developmental evolution of each within the context of wider organisational systems.

Team processes have been defined by Kozlowski and Bell (2003) as mechanisms that “inhibit or enable the ability of team members to combine their capabilities and behaviours” (p.26). Traditionally those team processes have been linked to team effectiveness through the “logic of an input-process-output (IPO) heuristic” that emphasise the factors that shape team activities and the emergent states that result from those processes (Kozlowski & Ilgen 2006). Several meta-analyses have confirmed the importance of a diversity of team processes and emergent states that are positively related to team performance. These include: team-efficacy and potency (Gully et al. 2002); emergent properties of team cognition (Dechurch & Mesmer-Magnus 2010); and different aspects of information sharing (Mesmer-Magnus & Dechurch 2009). At the same time authors such as Bettenhausen (1991), Cohen and Bailey (1997), Cook and Hilton (2015), Guzzo and Dickson (1996), Kozlowski and Bell (2003), Mathieu et al. (2008), Salas, Burke and Stagl (2004) and Salas, Sima and Burke (2005) have reviewed a wide-ranging collection of research studies on a diversity of team processes and team effectiveness in organisations. These reviews were far reaching and incorporated a myriad of internal team activities and team effectiveness variables that comprised cognitive, motivational, behavioural and affective team processes. This accumulative knowledge has supported the evolution of a variety of theoretical models outlining team effectiveness (Cohen & Bailey 1997; Fleishman & Zaccaro 1992), temporal development (Ilgen et al. 2005; Marks, Mathieu & Zaccaro 2001), dynamics and skills (Salas, Burke and Cannon-Bowers 2000; Salas, Burke & Stagl 2004).

These evolving understandings and representative studies form the conditions and context for any scholastic interpretation of team leadership. For many researchers there is a strong normative or functionalist orientation at the “interface” (Zaccaro & Klimoski 2002) between leadership and team processes. This conceptual perspective highlights attention on what the leader or leaders must do to facilitate team performance (Burke et al. 2006), how they must
foster synergy and teamwork among team members (Lord et al. 2017; Morgeson, DeRue & Karam 2010; Hackman & Wageman 2005) and “act in ways that provide teams with what they need when it is needed for successful collective action” (Lord et al. 2017 p.444). Grounding leadership within the team context separates team leadership models from traditional leadership frameworks because the central focus of activity is on the team as a unit (Morgeson, DeRue & Karam 2010). Furthermore, this intertwining of leadership and team processes suggests that they can become “inextricably integrated such that the boundaries of each set of processes become fairly indistinct” (Zaccaro & Klimoski 2002 p.6).

At its most basic, team leadership looks at what the designated leader should do to enhance team effectiveness. This functional perspective of leading teams has combined models of team processes with the individual role behaviour of a formally selected team member. In the context of the traditional I-P-O model (McGrath 1984; Hackman 1987) their activities are inputs into the function of team practices (Kozlowski et al. 1996; Mumford et al. 2002). Team leadership is conceptualised as individual leader skills, abilities, traits and behaviours that are thought to have a direct effect on team processes and performance (Day, Gronn & Salas 2004a). Several scholars have developed theoretical frameworks that specifically focus on the leader’s role and the important team functions that need to be accomplished. There are a wide diversity of leadership skills, roles and responsibilities included in each of the functional approaches. Some scholars have provided relatively simple taxonomies to outline the functional approaches undertaken by team leaders. For example, both Mathieu et al. (2008) and Burke et al. (2006) suggest that, although there is a diversity of labels ascribed to various leader functions, these can effectively be distilled down to two general categories that include task-focused and person-focused activities. The former category focuses on leader behaviours that support team members to understand their task requirements, appropriate task related knowledge and understanding of operating procedures. Conversely, the second category includes behaviours that support positive cognitive structures, attitudes, affective tone and relational interactions. This simple dichotomy was viewed by Burke et al (2006) as a “high level organising framework” for leadership behaviours in teams.

Equally succinct are models presented by Kozlowski and Bell (2001) and Kozlowski et al. (1996) who also recommend that functions can be grouped into two basic categories. In both cases, the leader is conceptualised as developing and shaping team processes and then monitoring and managing ongoing team performance. In very broad terms these frameworks provide some understandings of how leaders promote positive team processes. Other more specific frameworks provide acute understandings of team leadership responsibilities. One of these
taxonomies which was initially developed by DeRue and Morgeson (2005), and then further refined by Morgeson, DeRue and Karam (2010), emphasises 15 team leadership activities that are “fundamentally oriented around the satisfaction of critical team needs” (Morgeson, DeRue & Karam 2010 p. 8). In addition, Fleishman et al. (1991), has advanced a 13-team-leader dimension that focuses on “the perspective of leadership as functional social problem solving” (Zaccaro, Rittman & Marks 2001 p. 455). This taxonomy, which was generated from an extensive review of 65 earlier classification systems, was used by Zaccaro, Rittman and Marks (2011) as a foundation for their own model of leadership processes (Figure 2-1). Their theoretical framework examined how leaders promote positive team processes to influence team effectiveness through the effects of cognitive, motivational, affective and coordinative team processes. These authors acknowledge that, although the team leadership processes may have a direct effect on team performance, it is more likely that a more significant influence will occur in fostering more effective interactions among team members through the facilitation of various team processes. In a similar vein, several authors have also stressed the need for team leaders to remove roadblocks and maintain appropriate structural and contextual conditions (Hackman 2012; Kozlowski et al. 1996; Zaccaro & Klimoski 2002). These scholars explored the requirement for leaders to identify and facilitate conditions to allow the development of effective team outcomes. The importance of establishing appropriate conditions was also emphasised by Hackman (2002) and Hackman and Wageman (2005) who highlighted the need for team leaders to develop supportive organisational contexts and provide coaching to establish team coherence and enable team development.

![Figure 2-1: A model of leader performance functions contributing to team effectiveness](Zaccaro, Rittman & Marks 2001, p. 458)
While most studies and theoretical frameworks focus on team leadership at the intragroup level, some authors have examined a much broader level of analysis and explore the functional team leader relationships within multiteam systems (MTS). These teams are described by DeChurch and Marks (2006) as “tightly coupled constellations of teams offering specialised skills, capabilities, and functions aimed at attaining goals too large to be performed by a single team” (pg. 311). The level of investigation for researchers is generally at a point “higher than individual and team, but lower that the organization” and often “spanning the boundaries of multiple organizations” (DeChurch et al. 2011, p. 153). In this instance, it is the level of interdependence between teams that determine MTS membership, not organisational boundaries. In addition, rather than simply be viewed as a very large team, MTS are comprised of identifiable component teams, which may be of different types and structures. Each team performs interdisciplinary or transdisciplinary activities within the MTS network. Effective MTS have members who can shift their attention from within team activities to cross-team pursuits as warranted by changes and new demands within the environment (Marks et al. 2005).

Leadership functions in “teams of teams” are serving the same general roles and purposes as within singular teams, but the focal point differs. Consequently, best practices in stand-alone teams that work independently may fail to generalise to teams working collectively in MTSs (Mathieu et al. 2017). Effective multiteam leadership must balance the needs of internal teamwork with cross-team interdependencies in response to task and performance demands.

While it is only relatively recently that scholars have begun to empirically study team leadership (Morgeson, DeRue & Karam 2010), there is a growing body of research to support the contention that team leader interventions can reinforce the development of various team processes (Appendix A). These include: enhancing cognitive processes through enabling the evolution of team mental models (Marks, Zaccaro & Mathieu 2000), team learning (Koeslag-Kreunen, et al. 2018) and inter and intra team coordination (DeChurch et al. 2011). At the same time research has illustrated that team leadership has facilitated the development of positive affective states such as psychological safety and group cohesion (Bass, et al. 2003; Edmondson, 2003; Nemhhard & Edmondson, 2006), team potency and self-efficacy (Ahearne, Mathieu & Rapp 2005; Hu & Liden 2011), team trust and cohesion (Gupta, Huang & Niranjan 2010; Ming-Jian & Ming-Chia 2007), positive psychological climate (Chi, Chung & Tsai 2011; Edmondson 1999; Pirola-Merlo et al. 2002) and team motivational processes such as team empowerment (Kirkman & Rosen 1999; Kumpfer et al. 1993).

Among the different types of team leadership behaviours outlined in the literature (Appendix A), there are several “person-focused behaviours” (Burke et al. 2006, p. 291), that demonstrate
strong relationships with team level processes and outcomes. These “person-focused behaviours” are described as those that “facilitate the behavioural interactions, cognitive structures, and attitudes that must be developed before members can work effectively as a team” (Burke et al. 2006, p. 291).

The first of those “person-focused behaviours”, transformational leadership, has most frequently been examined at an individual level and outside a team context (Kearney & Gebert 2009; Gang et al. 2011). However, a few more recent studies have taken this “meso-theory” and “cut across organizational levels” (Klein & House 1995 p. 197) to explore the relationship between the transformational leadership of the team leader and performance at the team level.

Transformational leadership is the process by which a leader generates a strong emotional bond between them and followers by arousing enthusiasm and collective commitment to a common vision (Avolio & Yammarino 2002; Bass & Riggio 2006). This is hypothesised to result in higher levels of individual and group performance (Podsakoff, MacKenzie & Bommer 1996) and to create strong member identification with both the leader and with their work group (Yukl 1998). Transformational leaders do this by engaging in several types of behaviours. According to Avolio and Bass (2004) these leaders act in ways that provide both inspirational motivation and intellectual stimulation. The transformational leader articulates an arousing shared vision that describes a better future state. In addition, they develop meaningful challenges, clear expectations, goals and commitment to reach that vision. At the same time, these leaders also encourage change by urging others to regularly question the status quo and be innovative and creative in readdress old problems in new ways. Importantly, these leaders also demonstrate individualised regard by considering the needs, aspirations and abilities of organisational members and ultimately assisting them to grow to their full potential. Finally, transformational leaders are seen as both inspirational and aspirational as they display both idealised attributes and idealised behaviours (Bai, Lin & Li 2016) to advance the interests of their group.

The most frequently used instrument to measure this higher-level multidimensional construct in team leadership research has been the Multifactor Leadership Questionnaire (MLQ 5X). This was originally developed by Bass (1985) and adapted and improved by Bass and Riggio (2006) to include the behavioural components outlined above. Research has shown that while these components do correlate with one another they still distinctly measure their own leadership constructs (Muenjohn & Armstrong 2008). Furthermore, the MLQ Form 5X has been shown to adequately capture the full leadership factor constructs of transformational theory (Muenjohn & Armstrong 2008). While the MLQ questionnaire has been used most frequently, other
instruments or combined scales have been utilised to measure team leader behaviours. These include scales developed by Cheung, Ng, Lam and Yue (2001), Den Hartog, Van Muijen and Koopman (1997), Podsakoff et al. (1990) and Rafferty and Griffin (2004). Some of these instruments, such as Podsakoff et al’s. (1990) Transformational Leadership Inventory have been based on slightly different conceptual approaches and emphasised different constructs.

In general, meta-analytical studies have supported the validity of the transformational leadership construct, which appears to generalise across organisational types and environments (Judge & Piccolo 2004; Gang et al. 2011; Wang, Waldman & Zhang 2014) and has been consistent over time (Dumdum, Lowe & Avolio 2013). Meta-analysis conducted by Degroot, Kiker & Cross (2000), Dumdum, Lowe & Avolio (2013), Judge and Piccolo (2004), Lowe, Kroeck and Sivasubramaniam (1996), Patterson et al. (1995) and Gang et al. (2011) have confirmed the positive relationship between transformational leadership behaviours and performance outcomes reported in numerous independent studies. Most of these studies have focused on the impact of transformational leadership at an individual level. However, several of these studies have shown that transformational leadership has positive effects on performance across levels of analysis and that relationships are highest at a team level (Degroot, Kiker & Cross 2000; Gang et al. 2011). Some meta-analyses have specifically documented that transformational leadership is positively associated with team performance, particularly members’ perceived team effectiveness and levels of team productivity (Burke et al. 2006; Gang et al. 2011). Both Burke et al. (2006) and Gang et al. (2011) have hypothesised that several behaviours subsumed under the transformational leadership construct are strongly congruent to processes and dynamics found in effective teams. In other words, transformational leadership exhibits dual effects both on the individual and group level so that “the stronger effect of transformational leadership at the team level may piggy back on its individual level effect” (Gang et al. 2011 p. 251). Transformational leadership behaviours such as individualised consideration and intellectual stimulation may enhance team performance by fostering effects like team identity, team efficacy, organisational citizenship behaviour, collective direction and mutual support (Burke et al. 2006; Dionne et al. 2004; Gang et al. 2011).

Many team leadership studies that have focused on transformational leadership clearly speak in favour of the positive relationship between team members’ perceptions of the leader’s transformational leadership behaviours and team performance. However, apart from a small number of exceptions (Bass et al. 2003; Braun et al. 2013; Kearney & Gebert 2009; Keller 2006; Pearce & Simms 2002), most studies do not find a direct linkage between the team leader’s transformational leadership behaviours and team performance. Those studies that do show
some impact on team performance do so via a partially mediated association in which transformational leadership behaviours positively impact team interpersonal processes (Dionne et al. 2004; Kearney 2008). This finding reiterates some of the research undertaken by Gang et al. (2011) who concluded that transformational leadership was most strongly related to contextual performance (that is, employer attitudes and motivation) than employee performance. Current research illuminates and reinforces the positive impact transformational team leader behaviours have on a variety of team processes (see Appendix A). These include team motivational processes (Bass et al. 2003; Chou et al. 2013; Chi & Huang 2014; Jung & Sosik 2002; Pillai, Schriesheim & Williams 1999; Pillai & Williams 2004; Schaubroeck, Lam & Cha 2007; Strauss, Griffin & Rafferty 2009), team cognitive processes (Eisenbeiss, Van Knippenberg & Boerner 2008; Jiang & Chen 2016; Schippers et al. 2008), team affective processes (Bai, Lin & Li 2016; Butler, Cantrell & Flick 1999; Lehmann-Willenbrock et al. 2015; Whitford & Moss 2009; Pirola-Merlo et al. 2002; Zhang, Cao & Tjosvold 2011), in-role performance (Chun, Cho & Sosik 2016) and team coordination (Schippers et al. 2008; Zhang & Peterson 2011; Zohar & Tenne-Gazit 2008).

The second of the “person-focused behaviours” is viewed as an extension of the transformational leadership paradigm (Pearce et al. 2003; Pearce & Sims 2002). This related concept focuses on empowering leadership behaviours that “in short create followers who are effective self-leaders” (Pearce 2003, p. 125), who make independent decisions, think and act autonomously and generally take responsibility for their work (Houghton, Neck & Manz 2003). Behaviours that are indicative of this leadership style include encouraging teamwork, independent action, self-development, participative goal setting and opportunity thinking (Pearce et al. 2003; Pearce & Sims 2002).

Two bodies of research conducted by Kim, Beehr and Prewett (2018) and Lee, Willis and Tian (2018) examined how empowering leadership influences cognitive, motivational and affective employee outcomes. Their meta-analysis confirmed the positive links between empowering leadership behaviours and positive evaluations of the leader, employee commitment, work engagement, knowledge sharing, work effort, motivation and creativity (Kim, Beehr, & Prewett 2018). At the same time, findings of a study by Lee, Willis and Tian (2018) have provided specific empirical evidence concerning the relationship between empowering leadership and team level outcomes. Findings showed that empowering leadership was positively and significantly associated with team-level performance, organisational citizenship behaviour (OCB) and creativity. This, the authors concluded, suggested that leaders who empowered their subordinates “seem to particularly encourage OCB and creative behaviour” (Lee, Willis & Tian
2016, p. 316) and that the overall effects of empowering leadership on team performance were positive.

These results are supported by a small body of empirical work that is summarised in Appendix A. This research indicates that empowering team leadership is positively related to team efficiency, behavioural integration, empowerment, team performance, team potency, knowledge sharing and learning (Carmeli, Schaubroeck & Tishler 2011; Kirkman & Rosen 1999; Kumpfer et al. 1993; Magni & Maruping, 2013; Srivastava et al., 2006; Tung & Chang, 2011; Yun, Faraj & Sims 2005). Concurrently other research has also emphasised the significant impact that empowering team leadership has on individual team members. These outcomes include enhanced self-efficacy and adaptability (Ahearne, Mathieu & Rapp 2005), psychological empowerment and affective commitment (Chen et al. 2011).

2.2 Team Leaders to Plural Team Leadership

These findings, in combination with the growing support from various meta-analysis, indicate that transformational and empowering team leader behaviours have a powerful positive effect on team processes. However, while they have considerable potential to assist team processes, there is still much research needed to unravel how transformational and empowering leadership can enhance teamwork and affect interactions between team members.

The theoretical foundation of the transformational and empowering leadership models and schemas are based on the idea that the team leader is thought to bring many leadership skills and competencies to the team. These are used in such a way as to have a positive consequence on team processes which are then causally linked to effective team performance outcomes (Day, Gronn & Salas 2004a). However, several scholars have highlighted the important reciprocal relationship between the team leader and team processes so that team processes themselves are able to influence team leader effectiveness (Zaccaro & Klimoski 2002). At different times, team member capabilities, team composition, and environmental and resource constraints within the team are all likely to significantly mitigate team leader influence and effect (Zaccaro, Rittman & Marks 2001). In addition, authors emphasise the importance of establishing team leadership in the team context and concentrating on the influence of temporal facets such as the episodic nature of task dynamics, learning cycles and team development (Kozlowski et al. 2009; Wageman, Gardner & Mortensen 2012). This dynamic nature of team leadership has been captured and expressed in a variety of theoretical and conceptual taxonomies developed by Kozlowski et al. (1996), Marks Mathieu & Zaccaro (2000) and Morgeson, DeRue & Karam (2010). This episodic perspective on both team tasks and team
leadership distinguishes between both action and transition phases. These models of team leadership are conceptualised in contingency or contextual terms as different leadership actions of leadership functions are required at different phases of team performance.

While these theories incorporate various contingencies to determine which dimensions of team leader activity best fit the rhythm and needs of a team, they do not strongly emphasise the complex and dynamic nature of teams and their environments (Hackman 2012). As McGrath, Arrow & Berdahl (2000, p. 98) state, teams (groups) are:

*complex entities embedded in a hierarchy of levels and characterized by multiple, bidirectional, and nonlinear causal relations. Rather than isolated, groups are intricately embedded within, and have continual mutual adaptation with, a number of embedding contexts. Rather than static, groups are inherently dynamic systems, operating via processes that unfold over time.*

This description highlights the importance of both the team leader and the team members being both adaptive and dynamic to the needs presented in their internal and external milieu. While some authors like Kozlowski and Ilgen (2006) have described team leaders playing a key role in building adaptive capabilities, other scholars have begun to examine how team leadership emerges from within the complex social dynamics of teams. In this sense, team leadership moves beyond the contributions by an individual formal leader to be an emergent state that evolves from team functions and processes. This type of emergent team leadership is a within group phenomenon (Lord et al. 2017) in which a leader or group of leaders emerges informally. Empirical evidence supports the notion that team members do engage in emergent leadership behaviours (Yoo & Alavi 2004) and teams with emergent leaders have been found to outperform other teams (De Souza & Klien 1995). In addition, the dynamics of emergent leadership within teams has been most successful when team members have displayed both individual and collective leadership behaviours (Carte, Chidambaram & Becker 2006; Taggar Hackett & Saha 1999).

While emergent leadership can emanate from single or multiple sources, scholars have taken the concept of collective or plural leadership further by looking at team leadership as an emergent interactive dynamic that is a product of adaptive team outcomes (Uhl-Bien, Marion & McKelvey 2007). From this perspective, leadership is a dynamic process where people shift between leader and team member roles according to the needs of the group and the task. Leadership emerges from these dynamics between team members and is a team process conditioned by collective activities operating within the team environment. In this instance, the process of leadership is recast as a collective activity that increases leader personnel beyond the sole leader to include two or more people. Team leadership is an output of team processes and
is seen by Day, Gronn and Salas (2004) as best expressed through an IMOI (inputs, mediators, outcomes and inputs) framework that illustrates the cyclical and ongoing development of team-level leadership. This collective view of leadership better accommodates the dynamic and emergent properties of groups and the enhanced scope and complexity of team tasks.

This exchange in leadership processes supports groups to effectively respond to dynamic environments which are characterised by volatility, pace and change. Consequently, research that focuses at the team level, where distributed or shared leadership occur through the processes of team member interactions, is an important first step in uncovering the mechanisms of leadership as a process in increasingly complex systems. These forms of plural leadership acknowledge that leadership is essentially a shared, social process which evolves through collective social practices and relationship (Cunliffe & Eriksen, 2011). This relational perspective is an important element in any discussion about the operationalisation of different forms of collective leadership practice in teams.

2.3 Relational Leadership

Interpersonal relationships have always held prominence within the organisational behaviour literature and have over the years been described in a variety of different ways in leadership research (Uhl-Bien & Maslyn 2003). Early examples include several researchers who highlighted aspects of “relations-oriented leadership” (Bass 2003). These included concepts such as: interaction orientation (Bass 1967); employee centred behaviours (Likert 1961); facilitative and supportive interactions (Bowers & Seashore 1966); and leader developer behaviours (Reddin 1977). Hollander’s (1979) relational theory was one of the earliest models to identify the meaning of leadership and relational processes. His work highlighted the importance of the reciprocal influence and social exchange relationships between leaders and followers. Other leadership scholars have explored similar aspects of the relational perspective. For example, Cardona (2000) amalgamated aspects of Greenleaf, Spears and Covey’s (2002) servant leadership theory with ideas from Hollander’s relational leadership to create transcendental leadership, while Baliga and Hunt (1988) recognised the implication of the relational dynamics in their analysis of “representational leadership”. Different theories of leadership have also studied leader and follower relationships. Leader member exchange theory (Dansereau, Graen & Haga 1975) which differentiates high quality in-group relationships based on trust and mutual respect with low quality out-group relations based on contractual obligations alone. The fundamental concept that underlies this differentiation, and is inherent in leader member exchange theory, is that leadership occurs when both leaders and followers can develop effective partnerships that result in increasing influence, therefore enabling the many benefits
that these relationships might bring (Graen & Uhl-Bien 1995). Relational perspectives are also evident in aspects of research concerning Burn’s (1978) theory of transformational leadership. A transformational leader’s relational behaviours affect individual followers so that they embrace a new direction and meet the needs of the team (Bass & Avolio 1994; Burns 1978). This relational context includes the need for transformational leaders to demonstrate empathy, respect and care (Dixon 1998). The importance of these relational behaviours was recognised by Marshall Sashkin (1988) in his creation of The Leadership Profile questionnaire. This assessed four dimensions of transformational leadership. Two of those dimensions included “the management of trust” and the “management of respect” as behavioural foundations for the development of credible and caring leadership. The need for group members to transcend their own interests for the greater good of the team or organisation was also evident in Rost’s (1993) theory of post-industrial leadership. Rost (1993) proposed that “leadership is an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (Rost 1993, p. 102). This paradigm defines the process of leadership as a manager-subordinate exchange under fixed or organised conditions, in which the influence relationship focuses on individuals aligning with one another, to accomplish mutual or organisational goals (Uhl-Bien 2006).

Those researchers who have stressed the importance of relationship-based leadership have traditionally examined leader and follower interaction from the position of “relationships lying in individual perceptions, cognition, attributes and behaviours” (Uhl-Bein 2006, p. 661). This Cartesian perspective considers the individual’s consciousness (the mind) as existing independently of physical reality (the brain). Therefore, this outlook views relationships from the standpoint of the individual acting as an independent discrete entity and as the architect and controller of an internal and external order (Dachler & Hosking 1995). It supports “realist ontology” (Uhl-Bien 2006, p. 661) and a paradigm that emphasises the identity of individual attributes and unidirectional or reciprocal one-way causal relations between leaders and follower/subordinates. Relationships are examined from a constructivist approach (Hosking & Bouwen 2000), “from the perspective of the individual and their perceptions, intentions, behaviours, personalities, expectations and evaluations relative to their relationships with one another” (Uhl-Bien 2006, p. 655). From this viewpoint leaders are viewed as entities set apart from objects and systems that make up their milieu, including their followers/subordinates and the organisation. Furthermore, follower/subordinates are treated as the objects of leadership within static organised systems (Hosking & Morley 1988). The leader’s energy and focus are directed toward getting those “objects’ to think, talk and act in ways that reflect the leader’s perspective” (Dachler & Hosking 1995). Consequently, the leader’s central concern in
relationships is to influence or manipulate and the process of management is individual creation and the control of order (Uhl-Bien 2006).

More recently an alternative to the entity perspectives has gained prominence in research literature (Dachler & Hosking 1995). This emerging work has called for an expansion of relation-based approaches that extend beyond the leader-follower/subordinate dyad (Uhl-Bien 2006). This relational perspective utilises a very different ontology and epistemology (Hosking & Bouwen 2000). Rather than focus on the characteristics of the assigned leaders or followers, this orientation views leadership as embedded in the processes of social construction (Cunliffe & Eriksen 2011; Dachler & Hosking 1995; Hosking & Bouwen 2000; Hunt & Dodge 2000). Consequently, advocates of this perspective do not focus on the structures or positions found in organisations but view them as elaborate relational networks, with leadership emerging as an outcome of complex social dynamics within groups (Abell & Simons 2000; Dachler 1992; Dachler & Hosking 1995); “Individual people do not possess leadership; leadership happens when people participate in collaborative forms of thought and action” (Drath 2001, p. 15). This “relational constructionism” (Hosking & Bouwen 2000) advocates that the way people understand and learn about leadership is fluid and evolves through and in the processes of participation and relations with others. An organisation’s history and dynamic cultural processes mean that over time leadership is recognised during certain expressions and actions (Drath 2001). Knowing what constitutes leadership is developed as “text” through the accumulated knowledge of facts, events, documents, physical objects or any kind of individual or collective behaviour (Dachler & Hosking 1995). The vehicle for this socially constructed and distributed knowledge is narration and open dialogue (Cunliffe & Eriksen 2011). It is in the process of relations and language that a common understanding of leadership is continually made and remade (Dachler & Hoskings 1995; Foldy, Goldman & Ospina 2008). Leadership is viewed through the practice of “relational listening” or “relationally responsive dialogue practices” (Endres & Weibler 2017, p.224). Consequently, leadership is not confined by position or formal role because it is not the possession of a leader but is framed as a relational property of a group, a communal capacity and achievement (Drath 2001).

This relational perspective emphasises the importance of interdependence and the centrality of local historical and cultural context. These foundations are recognised by Drath (2001) and Hosking and Bouwen (2000) who suggest that leadership is understood and acknowledged by a set of principles of shared knowledge which reciprocally characterise and become the property of the social system. These principles “give meaning to definitions and styles” because they allow people to make sense of leadership through a shared recognition of certain thoughts,
words and actions as leadership (Drath 2001). The three principles identified by Drath (2001) are labelled personal dominance, interpersonal influence and relational dialogue. The first two principles are presented to better understand leadership afforded by the third principle; relational dialogue or, in effect, relational leadership. This knowledge principle is described by Drath (2001) as “a way of understanding that leadership happens when people who acknowledge shared work use dialogue and collaborative learning to create contexts in which work can be accomplished across the dividing lines of differing perspectives, values, beliefs, cultures and more generally, what I will refer to as differing world views” (Drath 2001, p. 14).

While knowledge principles evolve and change over time, they are bound by the need to perform and accomplish certain tasks. These tasks are characterised by Drath (2001) as “setting direction, creating and maintaining commitment, and facing adaptive challenge” (Drath 2001, p. 18). While these tasks are not all inclusive, they are considered as representative of a broader range of leadership activities. Each of the tasks can be described in broad terms, however, the interpretation and understanding of each of the tasks differs depending on the presence or absence of some knowledge principles about leadership itself. Drath’s (2001) summary of the tasks undertaken from the perspective of relational dialogue emphasise a view of leadership as the property of a social system or as a communal capacity which embraces difference. From the standpoint of relational dialogue, the task of direction is viewed as having multiple meanings and derives its efficacy from maintaining differences and ambiguity (Drath 2001). In addition, commitment is based on the removal of self-interest by “seeking a completion of self in an unknown but shared future” (Drath 2001, p. 25). Group members commit to the process of crafting the future even though the individual and collective benefits are unknown. The third task is achieved through relational processes that recognise leadership as creating meaning across world views. These views may be wide ranging and even conflicting. But no one view is privileged above another. This flexibility means that everyone is an equal partner in creating leadership and meeting the adaptive challenges facing groups and organisations.

The description and explanation of relational dialogue encourages thinking about leadership in terms of its outcomes, rather than the processes by which it is produced, that is, ways in which leaders produce it (Drath 2008). In addition, this paradigm enables leadership to be viewed as a collective culture within which group members share several beliefs about leadership and it is the leadership culture, not individual leaders, that is the source of leadership (Drath 2008). Finally, this perspective also encourages a systemic view of leadership development (Uhl-Bien 2003) with the goal of increasing “the capacity of the whole system to make sense of direction,
commitment and adaptive challenges at all relevant levels of understanding and responsibility” (Drath 2001, p. 165).

The renewed interest and focus on the relational perspectives have led to the development of Relational Leadership Theory (Uhl-Bien 2006). This concept is not presented as a traditional theory. It does not seek to identify whether a relational or entity perspective provides the best alternative to examining relational leadership. Rather Uhl-Bien (2006) presents Relational Leadership Theory as an overarching framework that views methods, approaches and ontologies concerning the relational dynamics of leadership from multiple orientations. Consequently, Relational Leadership Theory attempts to assimilate the main ontologies, entity and relational perspectives, by defining relational leadership “as a social influence process through which emergent coordination (that is, evolving social order) and change (that is, new values, attitudes, approaches, behaviours and ideologies) are constructed and produced” (Uhl-Bien 2006, p. 668). This definition of leadership is grounded in several assumptions. These assumptions strongly reinforce the epistemological principles underlying a relational view as described by Dachler (1992), Dachler and Hosking (1995) and Drath (2001). Firstly, Uhl-Bien (2006) emphasises that leadership relationships are not restricted to roles or positions defined by an organisation’s hierarchical structure. Rather, leadership can occur in any direction and focus on mutual influence; this may result in the collapse of the distinction between who is leading and who is following (Rost 1995). Uhl-Bien’s (2006) second assumption evolves from this expression of leadership as a jointly shared and created outcome. The second assumption stipulates that leadership becomes visible when processes of social influence lead to the emergence of social order and action. This change in social order and action is expressed through the new processes, approaches and attitudes held by group members that then enable different emergent coordination and goals within the organisation. The third assumption put forward by Uhl-Bien (2006) views leadership as a product of these dynamic social systems. Changes within these social systems result in relationships that become recognised as leadership. In other words, it is recognised as leadership because relational processes generate change within the social order, approaches, attitudes and goals of the organisation. This perspective emphasises the social forces working to influence group leadership and views leadership as an outcome of the relational process. These three assumptions suggest that Uhl-Bien (2006) views relational leadership as a dynamic social process generated throughout organisations where it emerges as an outcome of those collective dynamics, rather than as the product of any individual in a formal role. Uhl-Bien’s (2006) fourth and final assumption, reinforces the importance of context, and emphasises the work of Osborn, Hunt and Jauch (2002) who state that leadership “is socially constructed in and from a context where patterns
over time must be considered and where history matters” (Osborn, Hunt & Jauch 2002, p. 798). Consequently, this context is an important component in understanding the relational dynamics which create leadership.

In conclusion, the relational perspective is regarded as a significant advance in the understanding of plural forms of leadership and at the forefront of emerging leadership thrusts (Hunt & Dodge 2000). But, while the “relationality movement in leadership” (Uhl-Bien et al. 2012, p.319) appears to be building, the place of “relationality” in leadership research is still subject to passionate debate (Ospina & Uhl-Bien 2012). On the one hand, some scholars emphasise the need to develop an “interplay across the multiple views of relational leadership” (Ospina & Uhl-Bien 2012, p.22). These authors (Ospina & Uhl-Bien 2012, Uhl-Bien 2006) work toward an overarching framework that incorporates a variety of philosophical views and methodological approaches that facilitate both the study of relationships and the relational dynamics of leadership. At the same time, other researchers such as Endres and Weibler (2017) have laboured to ensure that they “help to clear up some misunderstandings on relational leadership” (Endres & Weibler 2017, p. 214) by plainly differentiating “relational social constructionist leadership (RSCL)” (Endres & Weibler 2017, p. 214) from all other entity, objectivist or constructivist stances. They view the field of RSCL as being at the nexus of social construction, high quality relating and emerging flows of leadership influence.

While there is still the need for greater clarification of what relationships and relationality mean in leadership studies, there is at the same time a developing convergence and interest amongst leadership scholars around the importance of relational dynamics. Leadership relationships are now at “the heart of many new approaches emerging in the leadership literature” (Uhl-Bien 2006, p. 672). What can be concluded is that relational leadership must include some element of collective exchange to be considered relational. At the core of relational leadership are assumptions of co-construction and social context. The framework, assumptions and epistemological foundation developed by Dachler and Hosking (1995), Drath (2001) and Uhl-Bien (2006) are at the heart elements of team leadership (Burke et al. 2006; Day, Gronn & Salas 2004a; Day, Gronn & Salas 2004b; Morgeson, DeRue & Karam 2010), distributed (Gronn, 2002; Harris & Spillane 2008) and shared leadership (Pearce & Conger 2003; Pearce & Sims 2000) theories. These paradigms also view leadership as a collective outcome of social processes in which there is mutual influence, but each recognise and prioritise those interactions in slightly different ways.
2.4 Distributed Leadership

The importance of emergence, interdependence, relational dynamics, behaviour setting and context has also underpinned another emergent perspective referred to as distributed leadership. To state that leadership is distributed within an organisation is, in many ways, unremarkable (Gronn, 2008). If leadership is defined as essentially organisational influence and direction then, in a practical sense, all leadership is inevitably distributed in some way (Harris 2008; Harris & Spillane 2008). The articulation of distribution seems to be parlance for many phenomena found in recent organisational literature (Gronn 2008) and perhaps not surprisingly there are many proximate terms and concepts. Within the domain of leadership research, the idea of distributed leadership corresponds with lateral (Kuhl, Schnelle & Tillmann 2005), collective (Hiller, Day & Vance 2006), participative (Vroom & Yago 1998; Leithwood et al. 2004), dispersed (Bryman 1996), democratic (Stogdill & Bass 1990; Wood 2004; Gastil 1997) and shared leadership (Pearce & Conger 2003). While the term distributed leadership has attracted a range of meanings and is associated with a diversity of practices (Wood et al. 2004), it does provide a unique perspective or alternative to the more traditional heroic single leadership model (Yukl 2002).

At the foundation of this concept of distributed leadership is the principle that leadership is an emergent property of groups or a network of interacting people, not of an individual (Bennett et al. 2003; Gronn 2000; Woods et al. 2004). Leadership emerges through interaction with other people and the environment (Spillane, Halverson & Diamond 2001). The important delineation is that leadership is the output of a group process rather than simply a new label for processes of collaboration, shared or participative activities (Harris 2004). This point of difference is outlined by Gronn (2002), who states that a distributed perspective views “leadership as less the property of individuals and more as the contextualised outcome of interactive, rather than unidirectional, causal process” (Gronn 2002, p. 444). In defining leadership as an emergent work-related influence, Gronn (2002) highlights two contrasting meanings of distributed leadership. The first he describes as numerical action. This is the aggregated leadership behaviour of some, many, or all of the members of an organisation, or an organisational sub-unit (Gronn 2002). This allows for the possibility that all members of a team may be leaders at some stage (Wenger 2000). However, this view of distributed leadership still examines leadership from the perspective of the individual. This is because the totality of leadership acts is the numerical sum of every single individual contribution (Gronn 2000). This view of leadership represents a minimalist view of distribution and is the most common understanding invoked in the research literature concerning distributed leadership (Gronn 2002).
Gronn (2000a) also described distributed leadership as something much more complex than simply the sum of parts. His alternative perspective evolves from foundations of Activity Theory and centres on, “influence attributable to organisational members acting in concert” (Gronn 2002b, p. 28). In his second explanation of distributed leadership, the behaviours which comprise the unit of analysis focus on concertive action rather than an aggregate of individual leadership acts (Gronn 2002a). This perspective of distributed leadership sees leadership emerging from “multi-member organisational groupings” (Gronn 2002b, p. 28). Gronn (2002a) identified three main patterns of concertive action which are attributed with distributed leadership. Each of the three patterns represents “successive stages in a process of institutionalisation” (Gronn 2002a, p. 431). The first stage, labelled spontaneous collaboration, describes a brief and sudden increase of synergy that occurs when individuals with varying skills and abilities pool their expertise to solve problems, and then disband (Gronn 2002a). In the second instance, intuitive work relations emerge over time when two or more organisational members develop close working relations (Gronn 2002a) with the result that leadership is “manifest in the shared role space encompassed by their partnership” (Gronn 2002a, p. 430). The third and final concertive form highlights institutionalised practice and the formalisation of existing or new structural relations, either by design or by adaptation (Gronn 2002a, p. 430). Some elaboration and refinement of Gronn’s (2002a) forms of distributed leadership have been proposed by Leithwood et al. (2007). They have focused on the extent to which the performance of leadership functions is consciously aligned across the sources of leadership.

Within the different forms of concertive action, each agent in a group acts conjointly (Gronn 2002a). It is this conjoint agency which is regarded as the defining attribute of concertive action (Bennett et al. 2003). Conjoint agency occurs when “agents synchronise their actions by having regard to their own plans, those of their peers, and their sense of unit membership” (Gronn 2002a, p. 431) so that the outcome is a “product or energy which is greater than the sum of their individual actions” (Bennett et al. 2003, p. 3). In addition, Gronn (2002a) determined that the evolution of conjoint agency “entails at least two processual components” (Gronn 2002a, p. 431), reciprocal influence and interpersonal synergy. A milieu of reciprocity between conjoint agents creates successive phases or cycles of collective influence (Gronn 2002a) and supports a psychological bond, “which strengthens a coincidence of effort, goals, and resources in the pursuit of mutually agreed ends” (Gronn 2002a, p. 432). While both formal (for example, role incumbency) and informal (for example, friendships) synergy ensures the “expression of latent capacities and possibilities” (Gronn 2002a, p. 431) they also provide the foundation for greater interdependence and coordination (Gronn 2002a).
So that the foundations of concertive action and emergence can be effectively conceptualised, Gronn (2002a) suggests that the mutually exclusive categories of leader and follower are replaced with a notion of both as collaborators in accomplishing group tasks. The focus becomes one of divisions of labour, task integrations and the social and environmental contexts, rather than the application of “traditional stereotypic dualisms like leader-followers” (Gronn 2000, p. 318).

The influence of the socio-cultural context has been investigated further by Spillane et al. (2004). Their work has viewed leadership from a foundation of distributive cognition, a perspective they have superimposed upon leadership practices. Central to the view of distributed cognition is the idea that cognitive events are not solely encompassed within the minds of individuals. Rather, cognitive processes may be distributed across a social group (Salomon 2003). The situation and contexts, within which groups operate, along with cultural objects and tools, both mediate and structure thinking. The corollary of distributed cognition is that learning is “also socially structured and is part of the overall system of collective relations between agents, activities and object” (Gronn 2000, p. 323).

This view of the “distributed mind” (Gronn 2000) emphasises the mutuality of the individual and the environment and the need to consider how the material, cultural and social situation enables, informs and constrains human action. Similarly, distributed leadership implies that the practice of leadership is one that is shared, realised and learnt within teams, extended social groups and networks (Harris 2008). The important unit of analysis when examining the emergence of distributed leadership is leadership activity (Spillane, Halverson & Diamond 2001). This is “constituted in the interaction of multiple leaders and followers using particular tools and artefacts around particular leadership tasks” (Spillane, Halverson & Diamond 2004, p. 10). Spillane, Halverson and Diamond (2004) consider the evolving interdependencies between leadership activities as critical. Especially the examination of how social interaction and situation simultaneously constitute leadership practice through task enactment. This emphasis implies a distribution of leadership where the leadership function is stretched over the social and situational context (Spillane, Halverson & Diamond 2004). To understand and explain how the practice of distributed leadership is stretched over leaders, followers and artefacts in situ, Spillane, Halverson and Diamond (2004) examine reciprocal interdependencies within the social distribution of task enactment. This discussion and examples supported Spillane, Halverson and Diamond’s (2004) central argument that leadership practice must be analysed in relation to the tasks associated with leadership responsibilities and “the artefacts that represent in reified form the problem-solving initiatives of previous human action” (Spillane, Halverson & Diamond 2001,
These materials and structures are not just affecting what leaders do, but instead are constitutive of their practice. The authors also emphasised social context and the importance of inter-relationships as integral parts of distributed leadership activity (Harris 2008). Leadership activity and leadership thinking emerge “in between” interdependent practices and through the interactions of leaders, followers and situation with sociocultural context being a fundamental constitutive element of leadership practice (Harris & Spillane 2008).

Several of the reciprocal interdependencies emphasised by Spillane, Halverson and Diamond (2004) echo aspects of Gronn’s (2008) conjoint agency. In particular Spillane, Halverson and Diamond’s (2004) multiplicative model, in which the collective cognitive properties of a group of leaders working in unison result in the evolution of leadership practices that are more than the sum of everyone’s performance. This person plus perspective (Harris 2008) focused on synergistic relationships among some, many or all sources of leadership in an organisation. As a result, Spillane, Halverson and Diamond (2004) not only concentrated on the interdependencies between leaders, but they also extended these arguments to the relationship between leaders and followers. From the perspective of distributed leadership, Spillane, Halverson and Diamond’s (2004) saw followers as a necessary component of leadership activity. Rather than viewing followers as mediating leadership, the leaders are dependent on the followers they lead (Smylie & Hart 1999). Followers are “therefore a composing element of leadership activity” (Spillane, Halverson & Diamond 2004, p.19).

Gibb (1954) claimed that leadership was probably best conceived as a group quality, as a set of functions which must be carried out by the groups. If distributed leadership is to be distinctive from other forms of leadership theory, then it is the inherent characteristic embodied in concertive action or conjoint agency and the emphasis of leadership as a fluid and emergent property of a group or network rather than as a fixed individual phenomenon that sets it apart (Bennett et al. 2003; Woods, et al. 2004). In fact, Gronn (2002) suggested that rather than include the concept of numerical action, “In hindsight, it may have been better to confine ‘distributed’ to instances of conjoint agency” (Gronn 2002, p. 431). However, it is important to note that both Gronn (2002) and Leithwood et al. (2007) emphasise that distributed leadership is dependent on “effective forms of focused leadership-leading the leaders” (Leithwood et al. 2007, p. 55). Consequently, distributed leadership practice is more accurately represented by a fusion of both hierarchical and heterarchical elements of emergent activities (Leithwood et al. 2007; Harris 2008). Distributed leadership does not imply that the formal vertical leadership structures within organisations are unnecessary (Harris 2008).
If distributed leadership is to be a product of groups, something that emerges “in-between” group members interdependent practices (Gronn, 2002; Spillane, Halverson & Diamond 2004), then the focus of research must be at a group level. These groups may be long term institutional forms, such as team structures or working groups, temporary teams or ad hoc clusters which offer a more fluid and immediate response to change (Harris 2007; Woods et al. 2004). Alternatively, if distributed leadership is viewed as a practice stretched over the social and situational context, an activity that emerges and flows within a network and complex web of patterns and roles within organisations, then distributed leadership can also be treated as a quality of the whole organisation, a systemic characteristic. The context of distributed leadership from an institutional perspective is largely cultural and the function is social legitimacy and organisational survival (Ogawa & Bossert 1995). The building blocks underlying distributed leadership at this systemic level are founded on the relational dynamics and reciprocal influence that emerges through ongoing social interactions (Ogawa & Bossert 1995).

Distributed leadership is regarded as a more effective way of coping with the complexity of information and rapid changes in society (Harris 2008). It is a more accurate reflection of changes in leadership practice (Harris & Spillane 2008). This normative perspective has also highlighted the importance and potential distributed leadership has for capacity building in organisations (Harris 2004). In particular, “on the job” leadership development (Storey 2004), reciprocal learning (Harris 2004), enhanced commitment (Storey 2004), teacher effectiveness and student engagement (Leithwood & Jantzi 2000), effective and targeted expert decision making (Storey 2004) and the development of professional learning communities (Harris et al. 2007). However, distributed leadership cannot necessarily be regarded as a “good thing” (Harris et al. 2007). Rather than enable productive synergies among agents, it also has the potential to develop incoherence in organisations and teams (Bryk 1999). This is through the evolution of conflicting roles (Harris 2008), boundaries and priorities (Harris et al. 2007). Interestingly, most of the empirical evidence that suggests organisational benefits from distributed leadership has been in studies that have not focused primarily on this form of leadership practice (Harris 2007). While there are some exceptions to this statement, (Camburn et al. 2003; Leithwood et al. 2007; Spillane, Camburn & Pareja 2007), specific studies of distributed leadership practice remain limited in number or mainly focus on small population samples in schools (Spillane et al. 2008).

In summary while there is considerable theory, there is little empirical knowledge about whether distributed leadership has a positive effect on organisational development and change (Harris 2007; Spillane et al. 2008). The absence of this evidence provides opportunities to
explore the necessary conditions to facilitate productive synergies among agents within a distributed leadership framework (Gronn 2002 a).

2.5 Shared Leadership

In contrast, the shared leadership model has received a great deal more attention and consequently there are a larger number of empirical studies that examine this group phenomenon of lateral influence (Day, Gronn & Salas 2006; Pearce & Conger 2003; Pearce & Sims, 2000). Shared leadership overlaps with aspects of team, relational and distributed leadership theory and, like them, contrasts with the more conventional concept of “vertical leadership” (Pearce & Sims 2002). The source of vertical leadership is usually an individual formal leader who is often positioned above in the organisational hierarchy. This person is invariably external to the team, has formal authority over the team and is consequently responsible for its processes and outcomes (Carson, Tesluk & Marrone, 2007). In contrast, shared leadership relies on a dynamic exchange of lateral influence among peers, rather than simply being dependent on vertical downward influence (Cox, Pearce & Perry, 2003). Like relational, team and distributed leadership models, shared leadership examines leadership practices as a group level experience (Fletcher & Kaufer, 2003; Pearce & Sims 2002).

In their analysis of this process, some authors frequently use the terms team, distributed and shared leadership interchangeably (Avolio, Walumbwa & Weber 2009; Carson 2005; Day, Gronn & Salas, 2006; Day, Gronn & Salas, 2004; Ensley, Hmieleski, & Pearce, 2006). In addition, research findings are also occasionally integrated with authors such as Harris (2008) incorporating empirical studies on shared leadership within the domain of distributed leadership. Alternatively, theoretical discussions and analysis of distributed leadership at a team level have informed works in shared leadership (Carson, 2005; Day, Gronn & Salas, 2006).

Like distributed leadership, the concept of shared leadership is clearly still evolving with scholars “grappling how to define and articulate a theory of shared leadership” (D’Innocenzo, Mathieu & Kukenberger 2016, p. 1965). One significant example of its early stage of development is the lack of agreement on its definition (Carson, Tesluk & Marrone, 2007; Zhu et al. 2018). While the most frequently cited definition is that of Pearce and Conger (2003), as “a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals or both” (Pearce & Conger 2003, p. 1), the term has been used in a myriad of ways. These variants have described different aspects of shared influence within or by a group. The descriptions of influence include mutual (Mayo, Meindl & Pastor, 2003), reciprocal (Shamir & Lapidot, 2003), lateral (Locke, 2003), team
(Sivasubramaniam et al. 2002) and collective (Avolio et al. 2003; Cox, Pearce & Perry 2003). These definitions focus on multiple sources of influence within groups rather than a formal position or specific individual leadership behaviours. The feature of increased numbers, beyond a sole leader to include two, three or more persons, is a central feature of shared leadership (Day, Gronn & Salas 2004). The process of shared leadership can therefore be conceptualised along a continuum based on the number of sources of leadership influence (Carson, Tesluk & Marrone, 2007). Groups with high levels of leadership are characterised by most, if not all, members providing a relatively equal amount of leadership influence to one another (Carson, Tesluk & Marrone, 2007; Pearse & Sims, 2000, 2002). Under these conditions shared leadership may be viewed as a group level phenomenon or outcome (Avolio, Walumbwa & Weber, 2009; Carson, 2005; Day, Gronn & Salas 2004). A natural expansion is to describe shared leadership as the condition in which groups collectively exert influence (Burke, Fiore & Salas 2003; Cox, Pearce & Perry 2003; Ensley, Hmieleski & Pearce 2006; Pearce & Manz, 2003) or to view it as a property of a whole system (O’Connor & Quinn, 2004). Conversely, processes that involve the coexistence of vertical and team leadership may be found (Shamir & Lapidot, 2003). Here co-leadership or joint leadership occurs at the furthest reaches of the range, with each of these being “considered a special case of shared leadership, the 2-person case” (Pearce & Sims 2000, p. 121). Joint and co-leadership may take two different forms, with incumbents exercising joint authority between formal roles or alternatively sharing leadership functions through informal relationship across hierarchical levels (Day, Gronn & Salas, 2006).

Some authors have focused on defining shared leadership by examining the distribution of specific leadership functions, behaviours and roles. The functional perspective centres on the progression by which the leadership function is dynamically transferred within a group (Burke, Fiore & Salas, 2003; Carson, Tesluk & Marrone, 2007; Pearce, Manz & Sims, 2008). This approach argues that the primary role of team leaders is to ensure critical group functions are met (Burke, Fiore & Salas, 2003; Friedrich et al. 2009). Leadership is defined by a generic set of responses that must be tailored to the management of both internal and external factors such as task characteristics, the stage of team development and level of interdependence (Burke, Fiore & Salas, 2003; Seers, 1996; Seibert, Sparrowe & Liden, 2003). Specific leadership roles or functions may include instructing, coaching staff, coordinating and monitoring performance or facilitating group learning (Burke, Fiore & Salas, 2003; Seers, 1996; Seibert, Sparrowe & Liden, 2003). In contrast, researchers such as Houghton, Neck and Manz (2003), Pearce (2004) Pearce and Sims (2000) and Pearce and Manz (2005a) define shared leadership as the practice by which different individuals within a group simultaneously share and undertake the behaviours and roles of a traditional hierarchical/vertical leader. These complementary leadership
behaviours and roles include, but are not limited to, developing and enabling relationships in
the group, organising the completion of tasks and developing a vision (Friedrich et al. 2009;
Mendez 2015). The specific leadership activities may be supported by an array of peer
leadership behaviours that are shared by and collectively influence team members (Perry et al.
1999). These leadership behaviours are categorised by Cox, Pearce and Perry (2003) and Ensley,
Hmieleski & Pearce (2006) as transformational, transactional, directive, empowering and
supportive behaviours.

The processes of transference or simultaneous enactment of functions, roles and behaviours
suggest a series of a priori assumptions. Firstly, shared leadership has a collective or relational
orientation in that it focuses not on a single individual but instead on mutual influences present
among a group of people (Carson, 2005; Fletcher & Kaufer, 2003; Pearce & Sims, 2000).

Secondly, from a shared leadership perspective, organisational or team members are not
created equally (Friedrich et al. 2009; Seibert, Sparrowe & Liden, 2003), as there are a variety of
knowledge, skills and abilities spread throughout a group. However, in conventional role
relationships, such as leadership-followership and super ordinate-subordinate, ranks are
replaced with alternate lateral position relations, that evolve from the sharing of leadership
functions in groups or teams (Bligh, Pearce & Kohles, 2006; Day, Gronn & Salas, 2004).

Thirdly, the processes involved are dynamic. Over time different expertise, skills and behaviours
will be more appropriate to meet the internal and external demands of a given situation (Cox,
Pearce & Perry 2003; Friedrich et al. 2009). Thus, the transference or simultaneous sharing of
leadership functions is an adaptive response to the specific context, generated by the dynamic
environmental demands (Burke, Fiore & Salas, 2003).

Fourthly, different group members will vary in their ability to carry out specific leadership tasks
and meet these diverse external and internal demands. Consequently, at various points in time
there will be differing levels of individual influence among group members (Seibert, Sparrowe &
Liden, 2003), as the situation, not the individual, provides the basis for leadership (Pearce &
Sims 2002; Seibert, Sparrowe & Liden, 2003).

The fifth assumption is that, while there will be changes in the pattern of leadership
distribution, group members remain highly interdependent as the process of leadership
emerges from mutual and reciprocal influence (Carson, 2005) and must be reliant upon factors
such as shared responsibility, knowledge, ownership, initiative and collective learning (Fletcher
& Kaufer 2003; Horner 1997; Pearce & Sims 2000; Seers 1996). However, it cannot be assumed
that shared leadership will arise simply because there are a multitude of highly effective and skilled individuals within a group (Cox, Pearce & Perry 2003). This alone is not sufficient to generate shared leadership as an outcome (Friedrich et al. 2009). For example, group members need to learn how to collectively participate in shared leadership processes so that they can make better sense of and solve complex challenges experienced by the group or team (Drath & Palus 1994). Therefore, certain group processes may even be preconditions for shared leadership to materialise and be successful (Bligh, Pearce & Kohles 2006; Burke, Fiore & Salas 2003; Carson, Tesluk & Marrone 2007; Conger & Pearce 2003; Cox, Pearce & Perry 2003; Day, Gronn & Salas 2004; Pearce & Sims 2000; Pearce & Sims 2002). The pattern of exchange relationships may also be an important determinant that enables processes of sharing of information, collaboration and joint decision making that are so crucial to the emergence of shared leadership (Day, Gronn & Salas 2004; Seibert, Sparrowe & Liden 2003). Very different patterns of influence, group characteristics and shared leadership outcomes will emerge from collective exchange structures that are fragmented, polarised or unified (Seibert, Sparrowe & Liden 2003).

A further assumption underlying the shared leadership concept is that leadership is a property of the group or system, rather than the property of individuals (Avolio, Walumbwa & Weber 2009; Carson 2005; Carson, Tesluk & Marrone 2007; Cox, Pearce & Perry 2003; Day, Gronn & Salas 2004; Fletcher & Kaufer 2003). This is chiefly because shared leadership is viewed as occurring in and through relationships and networks of influence (Fletcher & Kaufer 2003). This social process “is portrayed as a dynamic, multidirectional collective activity that, like all human action and cognitive sense-making, is embedded in the context in which it occurs” (Fletcher & Kaufer 2003, p. 23). It is an emergent outcome of effective group process (Day, Gronn & Salas 2004). The process of emergence is a pivotal concept in the transfer of leadership functions. Several authors (Conger & Pearce 2003; Pearce 2004; Pearce & Conger 2003; Pearce & Sims 2002) specifically define the process as “serial emergence” of multiple official, as well as unofficial leaders. Serial emergence itself is viewed as a group-level phenomenon. This develops “through an unfolding series of fluid situational appropriate exchanges of lateral influence” (Cox, Pearce & Perry 2003, p. 53) as the team or group changes and evolves. The concept of “serial emergence” is viewed by Carson, Tesluk and Marrone (2007) and Pearce and Sims (2002) as both consistent with, but also distinct from, Bales’ (1953) model of “emergent leadership”. The similarity lies in the provision of leadership influence by a group member who is an informal but emergent leader. However, there are also several distinctions. Emergent leadership is concerned with the ultimate selection by group members of one or two designated formal leaders within a leaderless group (Pearce & Sims 2002). In contrast, “serial emergence” within
the context of shared leadership is focused on the contribution of alternate sources of informal and formal leadership for ongoing team functioning in groups that may never include a designated leader.

The notion of emergent leadership is one of several important conceptual foundations that are considered as historical antecedents to the evolution of shared leadership theory (Pearce & Conger 2003; Pearce & Sims 2000). Other important foundations include Kerr & Jermier’s (1978) Substitutes for Leadership Theory and research in the areas of empowerment and self-managing teams (Stewart & Manz 1995). These are considered by Pearce & Conger (2003) and Pearce & Sims (2000) as a critical theoretical basis for shared leadership. Authors such as Seers, Keller and Wilkerson (2003) and Seibert, Sparrowe and Liden (2003) have also emphasised the importance of leadership influence and recognise that these processes are embedded within social interactions that are widely dispersed among group members (Pearce & Conger 2003). Underpinning this perspective is social exchange theory, which has been extensively employed to enhance the understanding of leadership and social interaction in groups (Seibert, Sparrowe & Liden 2003). Consequently, social exchange theory has also provided an important academic contribution to the current knowledge of shared leadership practice (Pearce & Conger 2003; Seers, Keller & Wilkerson 2003).

An extensive historical review of the evolution and conceptual bases of shared leadership theory has been provided by both Pearce and Sims (2000) and Pearce and Conger (2003). This conceptual grounding extends in chronological order from Mary Follett’s (1924) “Law of the Situation” to more recent theoretical underpinnings such as shared cognition (Cannon-Bowers, Salas & Converse 1993). The object of this endeavour was to unite these disparate historical foundations into an integrated conceptual framework (Pearce & Simms 2000) and to ensure that future research on shared leadership is well grounded in earlier theory and literature on leadership, management and teamwork (Pearce & Conger 2003). While this historical review has assisted in defining the gradual evolution and continual development of shared leadership theory (Day & Harrison 2007), it has not enabled an integrated conceptual framework. Rather, the inconsistency in defining the phenomenon of shared leadership by different researchers is a striking example of the lack of unity, consensus and homogeneity regarding the defined parameters of shared leadership processes (Lowe 2006). This lack of uniformity is also evident in the variety of theoretical perspectives used by researchers to examine shared leadership within groups. The variety of research lenses have included a relational perspective (Carson 2005; Fletcher & Kaufman 2003), the application of shared cognition (Burke, Fiore & Salas 2003; Ensley & Pearce 2001), social network analysis (Carson, Tesluk & Marrone 2007; Mayo, Meindl...
& Pastor 2003) and Csikszentmihalyi’s (1990) notion of flow. This assortment of theoretical treatment is evidence of the need to understand the dynamics of shared leadership and its relationship to other streams of organisational behaviour theory (Conger & Pearce 2003; Pearce & Sims 2000).

While there may be some confusion about how shared leadership is defined, importantly authors stress that shared leadership remains distinct from other theoretical constructs. For example, the conceptual difference between shared leadership and aspects of shared cognition, shared mental models and transactive memory systems, is that the former is concerned with mutual influence and the latter with collective cognition. Although these are distinct concepts, it is likely that both transactive memory systems and shared mental models enable the emergence of shared leadership (Carson, Tesluk & Marrone 2007). Shared leadership is also distinct from other theoretical concepts such as empowerment (Conger & Kanungo 1998), participative decision making (Vroom & Yetton, 1973), self-leadership (Manz & Sims 1980) and super leadership (Houghton, Neck & Manz 2003). While these constructs are all potential antecedents to shared leadership, none of them sufficiently captures the notion of mutual and reciprocal influence that is critical to the process of shared leadership (Carson 2005; Houghton Neck & Manz 2003).

In addition, several authors have differentiated shared leadership from the more traditional concepts such as transactional-transformational leadership which focus on the relationship of a solitary leader and their influence on a group of followers (Hooker & Csikszentmihalyi 2003). This dyadic process is also described as vertical leadership which is characterised as a downward influence on subordinates by an appointed leader. The leader is typically positioned in higher levels of the organisation and external to the group or team (Carson, Tesluk & Marrone 2007).

In contrast, the primary foundation of shared leadership research has been the impact of dynamic interactive influence among peers (Carson, Tesluk & Marrone 2007; Cox, Pearce & Perry 2003; Pearce & Sims 2002). The distinction between vertical and shared leadership is regarded as significant with some authors suggesting that the two concepts are mutually exclusive (Conger & Pearce 2003; Fletcher & Kaufer 2003; Pearce & Sims 2000). However, an alternative perspective has been put forward by Avolio, Sivasubramaniam, Murry, Jung and Garger (2003), Carson, Tesluk and Marrone (2007), Conger and Pearce (2003), Day, Gronn and Salas (2004), Ensley, Hmieleski and Pearce (2006), Kozlowski & Bell (2003), Pearce (2004), Pearce and Simms (2000, 2002), Houghton, Neck and Manz (2003) and Locke (2003), all of whom recognise the need to establish an integrated model of shared leadership that acknowledges lateral, upward and downward influence within an organisations hierarchy. While
drawing a distinction between vertical and shared leadership affords the ability to examine the
two sources of leadership independently, an integrated perspective better reflects the reality of
leadership in many organisations (Locke 2003). Vertical leaders can act as a crucial catalyst
during the establishment of shared leadership in teams. Vertical leaders are often responsible
for the design or redesign of the team. They can also facilitate positive relations with external
consultants and the timely acquisition of appropriate resources (Pearce 2004). The
maintenance and development of shared leadership within a team can also be improved by the
effective integration of specific interventions initiated by vertical leaders (Day & Harrison 2007;
Locke 2003; Pearce & Sims 2004). For example, setting and reaffirming clear expectations and
boundaries, evaluating performance, supporting upward and lateral influence, ensuring
appropriate training or intervening directly with coaching (Carson, Tesluk & Marrone 2007; Cox,
Pearce & Perry 2003; Houghton, Neck & Manz 2003; Pearce 2004; Seibert, Sparrowe & Liden
2003). However, the challenge for vertical leaders is to find a balance between abdicating all
responsibility for a team or alternatively disempowering group members by micro managing
and seizing control (Pearce 2004). Several leadership scholars have suggested that any future
research concerning shared leadership must focus on an integrated model that brings together
leadership from “above and below” and thus enable a perspective that captures a fuller
understanding of shared leadership processes and outcomes (Day & Harrison 2007; Locke 2003;
Horner 1997; Pearce, Conger & Locke 2008; Pearce & Sims 2002).

Some scholars have stressed that there are a variety of significant benefits for work life and
team performance created by shared leadership in organisations. Researchers have indicated
that shared leadership is well suited to meeting the needs of knowledge based work and
complex tasks (Carson, Tesluk & Marrone 2007; Cox, Pearce & Perry 2003; Day, Gronn & Salas
2004). In addition, shared leadership enables processes that maximise the effectiveness of
flatter organisational systems and team-based structures such as self-managing teams or new
product development teams (Cox, Pearce & Perry 2003; Houghton, Neck & Manz 2003; Manz &
Sims 1987). Some researchers have also suggested that shared leadership can lead to several
benefits for groups and organisations (Muethel & Hoegl 2010). These include greater individual
commitment (Katz & Kahn 1978), more effective knowledge integration (Okhuysen & Eisenhardt
2002), increased task coordination (Muethel & Hoegl 2010), faster and more accurate decision
making (Seers, Petty & Cashman 1995), supportive cultures (Tjosvold 1995), individual capacity
building (Pearce & Manz 2005b) and improved team performance (Pearce & Sims 2002). From a
practical perspective, shared leadership is good for business (Burke, Fiore & Salas 2003) and a
practice that provides organisations with a competitive advantage (Carson, Tesluk & Marrone
2007).
However, shared leadership should not be viewed as the panacea to all the issues facing organisations in this knowledge era (Conger & Pearce 2003; Pearce 2004) nor should it be regarded as the sole replacement for existing theories of leadership (Pearce & Sims 2000). Rather, because the processes associated with developing shared leadership are themselves time consuming and multifarious, it ought to be established only for certain types of knowledge work that require team-based approaches (Pearce & Manz 2005). In fact, Conger and Pearce (2003), Locke (2003) and Locke et al. (2001) emphasise that certain leadership tasks are more effectively fulfilled by individuals rather than groups. Equal influence is not necessarily desirable in every situation (Seers, Keller & Wilkerson 2003). If all team members were to attempt to have equal influence always then the result may well be anarchy (Locke 2003). Alternatively, it is also possible that some group members may not be willing to accept the leadership influence of their peers (Conger & Pearce 2003; Locke 2003) or that the whole team may resist the notion of shared leadership (Pearce 2004).

Some team characteristics have been also cited by scholars as preventing the success of embedding and utilising shared leadership practices. These factors include an array of specific team characteristics. For example, if a critical number of team members lack suitable leadership competencies or there is an uneven distribution of the required skills, knowledge and abilities, then it is unlikely that shared leadership will result in positive outcomes (Conger & Pearce 2003). On the other hand, group traits such as the degree of goal alignment both within the team and between the team and the organisation, the strength of interdependency between group members, and their collective willingness to commit to a shared leadership process, have all been identified as potentially hindering the emergence of shared leadership (Carson, Tesluk & Marrone 2007; Conger & Pearce 2003; Cox, Pearce & Perry 2003; Pearce 2004; Pearce & Manz 2005). Other specific operational caveats include the amount of time available to develop shared leadership practices, the complexity of specific issues being addressed by the group, the associated need for creative problem solving and the level of urgency of a given situation (Conger & Pearce 2003; Pearce & Manz 2005).

While shared leadership is “not a one-size-fits all proposition” (Pearce 2004, p. 55) it is a useful tool that can enable leaders to accomplish tasks that requires leadership (Locke 2003). The limited research evidence that exists seems to suggest that shared leadership is possible and even beneficial to work life and teams (Carson, Tesluk & Marrone 2007; Pearce, Manz & Sims 2008). As teams are becoming an ever more prevalent feature of the landscape of organisations and environments continue to become increasingly complex and ill defined (Burke, Fiore & Salas 2003), far more genuine shared leadership is being demanded among a greater number of
individuals (Conger & Pearce 2003; Nicolaides et al. 2014). Consequently, it is becoming more and more likely that shared leadership is here to stay (O’Toole, Galbraith & Lawler 2003).

Although the concept of shared leadership has begun to emerge with increasing regularity within the leadership literature, most discussions have focused on the theoretical and practical applications of this group process (Day, Gronn & Salas 2004; Pearce & Manz, 2005). Empirical work is only just beginning to explore the antecedent and contextual factors, along with the consequences of shared leadership practices on the effectiveness of teams and organisations (Zhu et al. 2018). It is becoming clear that a far more precise understanding of how shared leadership evolves within a group and organisational setting is required (Conger & Pearce 2003). Future research will need to integrate theories of group and team dynamics at the micro level of social interaction, to understand and address shared leadership processes. For example, there is little insight into how individual level constructs that members bring to the team influence the development of shared leadership at the group or team level (Bligh, Pearce & Kohles 2006). Alternatively, not very much is known about the impact of group level constructs and how the team environment enables shared leadership (Avolio, Walumbwa & Weber 2009). Such dimensions may include team empowerment (Kirkman & Rosen 1997), the impact of reciprocal interactions and the development of distributed knowledge. These aspects, along with agreed understandings about shared purpose and the distribution of social support (Carson 2005) are some of the factors that may act to potentially moderate or mediate the emergence of shared leadership. Pearce and Conger (2003) have identified other broad categories that need research attention. These include an examination of both the distribution of roles and patterns of shared influence processes inherent in shared leadership environments and an investigation of the evolutionary stages within settings where shared leadership has emerged.

As a relatively new research perspective, studies in shared leadership have burgeoned over the last decade (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014). As a greater understanding of the concepts and processes associated with shared leadership emerge, it is apparent that the field holds much opportunity for future research (Conger & Pearce 2003; Nicolaides et al. 2014; Wang, Waldman & Zhang 2014). With a mounting emphasis on teams in organisations there has been an increasing need to better understand leadership dynamics in teams and team effectiveness (D’Innocenzo, Mathieu & Kukenberger 2016; Pearce & Sims 2002 Nicolaides et al. 2014; Wang, Waldman & Zhang 2014). Not surprisingly, the concept of shared leadership has become central to understanding the complexity of team-based processes (Bligh, Pearce & Kohles 2006; Burke, Fiore & Salas 2003; Carson, Tesluk & Marrone 2007; Hooker &
Csikszentmihalyi 2003; Horner 1997; O’Toole, Galbraith & Lawler 2003; Pearce 2004; Pearce & Conger 2003; Pearce & Sims 2000; Pearce, Yoo & Alavi 2004; Seers, Keller & Wilkerson 2003; Yukl 1998. The dearth of empirical work examining shared leadership in teams provides many opportunities for researchers to examine the dynamic exchange of lateral influence among peers (Burke, Fiore & Salas 2003). This focus comes at a time when greater understandings of effective decentralised leadership practices are becoming more important. Shared leadership is emerging as a more prevalent adaptive response within organisations as they meet the needs for creativity, flexibility, variety and innovation required for knowledge work (Hooker & Csikszentmihalyi 2003). Exploring individual, group and organisational factors that are conducive to enabling shared leadership practices is therefore a critical area for future research. Specifically, research into antecedents and impact of shared leadership may be critical in realising effective team-based structures, particularly as environments continue to favour more flexible and responsive organisations (Bligh, Pearce & Kohles 2006).

2.6 Plural Leadership in Teams

2.6.1 The central role of social and relational dynamics

A central tenet outlined in each of the different forms of collective leadership described in the literature review above is that leadership does not reside in one individual (Bennett et al. 2003; Drath 2001; Fletcher & Kaufer, 2003; Gronn 2000; Woods et al. 2004). Rather leadership is conceptualised as embedded in the processes of social construction (Dachler & Hosking 1995; Hosking & Bouwen 2000; Hunt & Dodge 2000). This dynamic social process is based upon complex reciprocal relationships in which there is double interact where the behaviours of the leader are contingent on, but also influenced by, the behaviours of team members (DeRue 2011). Consequently, leadership is occasionally described as emerging “in the spaces in between” colleagues (Bradbury & Lichtenstein 2000; Harris & Spillane 2008; Uhl-Bien, Marion & McKelvey 2007). If leadership is a jointly shared and created process, then followers or subordinates are no longer simply entities to be influenced by leaders. Rather, leading and following double interacts become inseparable as one actor whether a leader of follower, gives meaning and legitimacy to the other actors who are leading or following and together they are participants in a process of dynamic and mutual collaboration (Barker 2000; DeRue 2011; Drath et al. 2008; Gronn 2002a). The primacy of these social processes and relationships are repeatedly emphasised in, team, relational, distributed and shared leadership theories.

While both social processes and relationships may result in the emergence of leadership, the mechanisms that generate these collective outcomes are quite divergent. In the case of social processes, it involves the formation and definition of new roles, interactions and role opportunities in groups of people, where at an earlier point in time, none may have existed. In contrast, the relationships that occur in a group are centred on a series of role expectations that are either in practice or understood by individuals within the group (Barker 1997). Therefore, social processes may be regarded as unstructured, adaptive and emergent, while relationships are more organised, identifiable and developed. This delineation is mirrored in many of the descriptions outlined between and within various forms of collective leadership theories. While there is some reiteration of the view that leadership is an outcome of collective dynamics, the nature of how social processes and relationships enable leadership to emerge varies. For example, the functional perspective highlighted by several team and shared and distributed Leadership scholars (Burke, Fiore & Salas 2003; Carson, Tesluk & Marrone 2007; Day, Gronn & Salas 2004; Gronn 2002; Pearce, Manz & Sims 2008; Uhl-Bein, Marion & McKelvey 2007) emphasises the importance of group members fulfilling primary leadership roles that are critical to the performance of a team. These functions and roles include coordination, instructing, monitoring and facilitating (Burke, Fiore & Salas, 2003; Seers, 1996; Seibert, Sparrowe & Liden, 2003). The centre piece of this perspective is the understanding that these leadership functions are dynamically transferred between group members as the group responds to internal and external influences. Therefore, at any single moment in time, leadership influence will be centralised as one team member acts as the primary source of leading, while other group members respond with corresponding acts of following (DeRue 2011). The succession of these functions from one group member to the other requires an understanding between individuals, about a sequence and structure of leadership relationships based on those changing role expectations. This process of self-organisation and emergence focuses upon the realignment of relationships that are imperative to the effective functioning of the group.

An alternative viewpoint is provided by Houghton, Neck and Manz (2003), Pearce (2004), Pearce and Sims (2000) and Pearce and Manz (2005a) who suggest that specific leadership functions are simultaneously shared and supported by concurrent, complementary and shared leadership behaviours displayed by peers. The synchronised enactment of leadership roles implies considerable interdependence, coordination, communication, organisation and mutual understanding concerning existing leadership relationships. At the same time, the distribution of leadership behaviours among peers within the group emphasises the significance of the effect of social processes, outside those leadership relationships based on role expectations. This perspective is extended further by Cox, Pearce and Perry (2003), who interpret shared
leadership as a condition in which teams collectively exert influence. Shared leadership is not conceived as the alternation of leadership influence, but rather as the collective emergent process of group interaction. The system of interrelating individuals, in other words the group or team itself, is the spring of leadership. This form of shared leadership is a qualitatively different and stresses the importance of social process of group interaction and the negotiation of shared understanding (McCauley 2010; Pearce & Sims 2000).

The importance of these social processes was also stressed by Gronn (2002a) and Spillane, Halverson and Diamond (2004) in their descriptions of different aspects of Distributed Leadership. Firstly, Gronn (2002a) in his explanation of spontaneous collaboration highlights the significance of social processes that enable individuals within a group to create unstructured alliances to solve existing problems. The impact of social processes is further highlighted by Spillane, Halverson and Diamond (2004) who suggest that leadership thinking, and activity emerge “in between” the interdependent practices and interactions of group members with the existing social context forming a central foundation of the constitutive elements of the collect leadership practice (Harris & Spillane 2008).

The collective forms of leadership theory described in this chapter represent a unique ontology of leadership practice in teams. Elements of their theoretical frameworks complement the importance of social processes and relational interactions. Leadership cannot be understood apart from these social processes and relationships. Most importantly, leadership is an emergent and endogenous behavioural phenomenon that is a result of the developing relations between interdependent members of a social network. Whether the locus of leadership is ubiquitously distributed or periodically rotated and centralised, plural leadership in teams takes a “relational-structural” approach and examines the primacy and patterns of relationships between members and the structural patterning of social life (Fitzsimons 2011).

2.7 What is leadership, if it is plural?

If leadership is understood as a fluid and emergent outcome of group activities, then it is important to be able to clearly differentiate leadership activities from other team outcomes or processes. Unfortunately, descriptions within many of the different areas of collective leadership are ambiguous. For example, Harris, et al. (2007) describes Distributed Leadership as “the active distribution of leadership authority and agency” (Harris et al. 2007, p. 339); alternatively Gronn has defined it as “a status ascribed to one individual, an aggregate of separate individuals, or sets of small numbers of individuals acting in concert” (Gronn 2002a, p. 428). These descriptions seem to be more in keeping with the traditional leader-follower,
vertical and leader centric notions of influence and they do not assist in explaining exactly what happens as an outcome of leadership activities.

In contrast to these expansive definitions, Day, Gronn and Salas (2004) have framed distributed leadership within the foundation of team dynamics and team leadership. Distributed leadership is viewed as both an input and output of team processes. Within this context the social capital of collective leadership dynamics contributes to the team’s human capital, teamwork and team learning. In this framework, distributed leadership contributes to the groups team leadership capacity and the ongoing cyclic and episodic nature of teams. Within this framework distributed leadership in teams suggests that leaderships functions are actions recognised by others that contribute to developing team leadership capacity through supporting the development of human capital, teamwork and team learning.

The realisation of important and worthwhile outcomes for the group is also highlighted by some shared leadership researchers. For example, shared leadership is defined by Pearce and Conger (2003) “as a dynamic, interactive influence process, among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both” (Pearce & Conger 2003, p.1). Alternatively, Carson (2005) describes shared leadership as a group phenomenon which “represents a social process involving influence exhibited by many group members in the shaping of group tasks, motivation of group members, and stimulation of change and growth” (Carson 2005, p. 3). The notion of mutual and reciprocal influence is central to many of the definitions and descriptions of shared leadership as a group phenomenon and distinguish it from other team outcomes and processes such as empowerment, participative decision making and various forms of team cognition (Carson 2005; Carson, Tesluk & Marrone 2007).

These definitions and descriptions share an understanding of leadership as a social process in which individuals work together toward fulfilling collective outcomes. Therefore, groups who succeed in achieving group goals or realising values for the group are in effect demonstrating collective leadership. This axiomatic relationship between specific group outcomes and collective leadership is described in more detail by Drath et al. (2008). Their explanation of a new leadership ontology provides a pragmatic and functionalist perspective of collective leadership as an outcome of individual and shared leadership beliefs and practices within groups. They consider collective leadership practices from the practical outcomes that are created at a group level when people participate in shared work. From Drath et al’s. (2008) perspective, to practice leadership necessitates the production of direction, alignment and
commitment (DAC). Thinking of leadership in terms of outcomes means that wherever and whenever a group demonstrates DAC then leadership has been enacted and exists. It is the presence of these three outcomes that marks leadership (Drath et al. 2008; Eckert & Drath 2009). Leadership is regarded as an ensemble, primarily because the evolution of direction, alignment and commitment are social and relational in nature and because leadership is the achievement of whole groups and teams. “If direction is to be shared, everyone must understand and accept it; if alignment is to produce coordination and collaboration, everyone must be prepared to interact collaboratively with others; if there is to be commitment, everyone must put the good of the shared work above individual good” (Eckert & Drath 2009, p. 24). These three leadership outcomes are independent as they can be produced on their own and with separate and varying degrees of effectiveness. However, the overall criterion for the success of collective leadership is assumed to be the extent to which all three elements direction, alignment and commitment are produced and furthermore how they function together as a composite (Drath et al. 2008).

2.8 Summary

In summary, the theoretical conceptualisation of the different forms of plural leadership outlined in this chapter have highlighted the following foundations. Leadership is generated from the reciprocal influence behaviours of multiple personnel. These leadership behaviours can be expressed as the enactment of different functions or roles within groups, that are recognised as leadership because they enable specific group outcomes. These outcomes may include emergent states or processes such as enabling a shared direction, fostering team learning, commitment or motivation or supporting affective processes that enable change and growth. Over time, these plural leadership actions may appear as different configurations (that is, sequential or concurrent patterns of engagement). Furthermore, complex relational and social dynamics support the fulfilment of these shared or distributed functions or roles. Group members who contribute to the shared or distributed leadership environment will experience a multiplexity of relationships with others in the group. This is expressed through their interactions with different peers with whom they can be simultaneously leading or following at different points in time.

While this body of theoretical knowledge and conceptualisation of several different forms of plural leadership is promising, establishing measures and the operationalisation of these plural influence relationships is needed to validate these contemporary leadership approaches (Yammarino et al. 2012). Garnering an understanding of the conditions that support plural leadership, while also exploring the nature, patterns and structures of influence relationships
and the emergent states that arise, is an important next step in building a more comprehensive and integrated theory of collective leadership. Several scholars have undertaken empirical research to discover the relationship between plural leadership and team level outcomes, emergent states and contexts. The next part of this chapter aims to analyse existing studies of plural leadership in teams by focusing on issues of measurement, antecedent conditions, emergent states and outcomes relating to individual team or organisational measures of performance or effectiveness.

2.9 Plural Leadership Research: Antecedents, Moderators, Measurement and Outcomes

This section reviews the findings of empirical research specific to two different forms of leadership, distributed leadership and shared leadership, which in different ways imply varying degrees of plurality. These forms treat leadership as a collective phenomenon that is constructed through relationships and shared among different people in groups and teams. Even though the emerging systems and paradigms of collective leadership are eliciting greater attention among scholars, the amount of publicised research at a team level remains relatively small and unevenly distributed between these two forms.

The key dimensions of this review include a discussion of both research heuristics and the emerging research findings within each of the independent but occasionally coalescing streams of collective leadership. Researchers have also used both qualitative and quantitative methods at a dyadic and group level to measure the different forms of collective leadership. Where appropriate several tables have been included (Appendix B and Appendix D) to summarise the key dimensions of this research and the variety of antecedents, mediators and outcome variables highlighted in the research literature. This review will attempt to synthesise these empirical contributions and identify common domains and future research opportunities that cross these different streams of plural leadership.

2.9.1 Distributed Leadership Research

Distributed leadership scholars have focused on leadership dynamics at a variety of analytical levels ranging from examining pooled leadership between two, three or more co-leaders to investigating how leadership is spread across and between levels within organisations. Most attention in this area has been focused on researching leadership dynamics in educational settings (Spillane 2006). The purpose of this section is to review this array of contemporary research and highlight important themes that provide direction for future research.
2.9.2 Research Frameworks

While the concept of distributed leadership holds a variety of meanings within the research literature, the consensus points towards an emergent property in groups in which members pool their expertise (Bennett et al. 2003; Gronn 2000; Leithwood & Jantzi 2005; Spillane 2006). Therefore researchers, when examining aspects of distributed leadership, rarely focus attention on individual leadership attributes. Instead of taking an entity perspective, scholars examine the performance of tasks through the reciprocal influence, interaction and social distribution between individuals. This analysis extends from activities performed separately by two individuals (Gronn 1999; Gronn & Hamilton 2004) to examining long-term institutional forms that are characterised by fluid and emergent leadership (Spillane, Halverson & Diamond 2004). However, beyond this point the research framework diverges considerably, with the result that it “will very likely feel, to most readers, like a “buzzing confusion” of alternative perspectives or ideas” (Leithwood, Mascall & Strauss 2009, p. 271).

Several researchers have attempted to bring some clarity and consistency to this leadership paradigm. Authors such as Currie and Lockett (2011), Gronn (2002), Macbeth (2009) and Thorpe, Gold and Lawler (2011) have developed taxonomies of distributed leadership to theorise practice and establish patterns of activity. The classification system developed by Gronn (2002) categorises distributed leadership as either intuitive work relations or alternatively institutionalised practices. These forms of concertive action are then referenced to different sorts of conjoint agency (collective or co-performance). The evolving matrix also includes a “fine grained analysis of interdependence” (Gronn 2002, p.435) with a distinction between two members and multi member leadership groups. In contrast MacBeath (2009) has described six forms of distributed leadership processes (formal, pragmatic, strategic, incremental, opportunistic and cultural). This taxonomy was constructed by researchers and school personnel from 11 schools in England and was presented as a developmental sequence. The classification extended from the distribution of pragmatic leadership functions to the development of shared leadership cultures that included collective leadership activity and leadership reciprocity.

Unlike Gronn (2002) and MacBeath (2009) the frameworks developed by Currie and Lockett (2011) and Thorpe, Gold and Lawler (2011) plot distributed leadership practice along two different continuums. The work of Currie and Lockett (2011) draws attention to the interactive relationships between colleagues in the everyday practice of leadership by applying Gronn’s (2002) concepts of concertive action and conjoint agency. The spectrum of distributed leadership variants included quadrants ascribed as “Pure Distributed Leadership”, “Shared...
Leadership”, “Collaborative Leadership” and “Nobody in Charge”. In the case of Thorpe, Gold and Lawler (2011) their configurations of distributed leadership are based on Leithwood et al.’s (2007) holistic forms of distributed leadership. The framework includes a vertical transect that differentiates planned and emergent leadership activity and a second horizontal axis, which illustrates how distributed leadership activity may or may not be aligned within groups or with other organisational work. The four quadrants that evolved include “Classic Distributed Leadership” (aligned and planned), “Miss-planned Distributed Leadership” (misaligned but planned), “Emergent Distributed Leadership” (emergent and aligned) and “Chaotic Distributed Leadership” (misaligned but emergent).

These taxonomies have the potential to assist both practitioners and academics locate different approaches to distributed leadership and aid them in developing an informed critique of how groups go about everyday leadership practice in different contexts. However, the categorisation of distributed leadership inevitably presents a static and structured framework. Of course, in practice different forms of distributed leadership should be expected to shift and emerge in relation to the fluid context and influences from both the external and internal environments and because of the learning and adaptations that occur within the organisation.

The importance of context has been emphasised in Mayrowetz et al. (2009) in their “Work Redesign Model” of distributed leadership (Figure 2-2). This elaboration and extension of Hackman and Oldham’s (1980) “Job Characteristics Model” includes important aspects of context, which are viewed as both organisational and individual variables. These antecedents and moderators include factors such as organisational structure, relational trust and organisational stability. These are seen to not only impact the way that distributed leadership is implemented, but they also influence how distributed leadership is framed in schools. The author’s explication of this model highlights the importance of three transition mechanisms. These processes consider factors such as sense making, motivation and learning support, the reformation of various job redesign characteristics and the evolution of outcomes in the form of distributed leadership functions and school improvement.

According to Mayrowetz et al. (2009) this framework is an important starting point for predicting the success of distributed leadership reform in schools. The model not only provides the explanation of processes associated with distributed leadership reform, it highlights the importance of viewing distributed leadership and school improvements as outcomes with the latter being described “as the ultimate result of multiple performance of leadership functions” (Mayrowetz et al. 2009, p. 191).
The “Work Redesign Model” was later modified by Louis et al. (2009) and explored specific antecedents that might shape distributed leadership development. This heuristic framework was based upon the theoretical foundation espoused by Spillane, Halverson and Diamond (2001) and, as such, the authors emphasised distributed leadership as “the sharing and spreading of leadership work across individuals and roles throughout the school organisation” (Louis et al. 2009, p. 158). A major factor in organisational improvement was the “person-job relationship” and initiatives to develop distributed leadership were viewed as forms of work redesign. Job characteristics therefore formed an important context and antecedent for several factors inherent in the process of enabling distributed leadership patterns. The research model, which is shown below in Figure 2-3 is essentially a developed subset of the broader framework established by Mayrowetz et al. (2009). However, this heuristic emphasises the centrality of sense making and how it is entwined with learning to enable distributed leadership. Individual and collective sense making are ongoing processes in which dialogue and common actions lead to people learning together and developing a common understanding. This framework also emphasises the importance of trust as a critical moderator of, and antecedent to, both sense making, and the way distributed leadership is enacted. Again, distributed leadership and school improvement are accentuated as two important outcomes both of which in turn impact future processes of sense making and the embedding of trust within schools.
The taxonomies and heuristics outlined above are skewed towards examining systems and organisational domains or alternatively examine the distribution among formal incumbencies. This is in keeping with the view of distributed leadership as less a property of individuals and more as the contextualised outcome of reciprocal, rather than unidirectional, causal processes.

Context is a key issue in the development of different forms of distributed leadership. The research frameworks developed by Mayrowetz et al. (2009) and Louis et al. (2009) provide greater focus and attention to this issue and to the antecedents and reciprocal influence of some variables that are potentially associated with forms of distributed leadership practice in schools. These authors recognise the importance of collective leadership practice provided by many people within schools. The conditions that facilitate the emergence of distributed leadership and the extent to which different distributed leadership patterns effect both school improvement and organisational performance outcomes are a central focus of these research frameworks. However, because of the nature of these environments there are a wide variety of different ways distributed leadership may emerge and be enacted. Establishing causal associations between these variables at an organisational level of analysis will undoubtedly present a few significant challenges. Consequently, to develop a more comprehensive understanding of the impact of distributed leadership practices, some authors have found it more constructive to examine those practices at the level of teams.

A team level perspective has been adopted by Day, Gronn and Salas (2004) who applied the recent advances in understanding distributed leadership to examine team-level leadership as an outcome of teamwork and team learning (Figure 2-4). This model expresses the cyclical relationship and causal association between individual team member resources, teamwork processes, team learning and the emergent state of team leadership capacity. The impact of individual team member’s skills, knowledge and abilities contributes to the development of teamwork. However, the team leadership cycle emphasises that their effect is moderated by the resources and actions of formal leaders and the impact of planned interventions such as team coordination training. This framework is unique as it not only illustrates cyclical causal
feedback in the form of an “input-mediator-output-input” model, but it also interprets the “distributedness”, interdependence and “sharedness” of leadership practice as outcomes of individual capabilities, teamwork characteristics and collective learning behaviours within teams.

In conclusion, the research frameworks described above essentially fall into two types. The first group provide taxonomies of distribution by either developing categories of practice (Gronn 2002; MacBeath 2009) or quadrants based on theoretical continuums (Currie & Lockett 2011; Thorpe, Gold & Lawler 2011). One of the important differences between these frameworks is whether they pursue a descriptive or normative orientation. For example, Gronn (2002) adopts a descriptive approach, which is based primarily on relationships such as those that are co-performed or collective and structures which emphasis the number of members in the group. In contrast, while Thorpe, Gold and Lawler’s (2011) “Dimensions of Leadership” was intended to simply provide a means of locating different approaches to distributed leadership, it does have a strong normative element. The authors stress that for distributed leadership to be effective it must be placed within variants of aligned practice described as “Classical” or “Emergent” distributed leadership. These forms are considered more effective when compared with the misaligned “Chaotic” and “Miss-planned” distributed leadership categories.

(Source; Day, Gronn & Salas 2004, p. 862)

Figure 2-4: Team Leadership Cycle; team-level leadership as an outcome of teamwork and team learning
The second group of authors (Day, Gronn & Salas 2004; Louis et al. 2009; Mayrowetz et al. 2009) provided various theoretical frameworks to examine the relationship between the multiple plural practice of leadership and performance outcomes such as school improvement. Authors used a single level of analysis to examine these relationships at either a school-wide or team level. The meso-level framework adopted by Mayrowetz et al. (2009) illustrates the extent and breadth of contextual antecedent and moderators that are linked to the development of distributed leadership in schools. Alternatively, Day, Gronn & Salas (2004) shown in Figure 2-4 have proposed a series of relations between individual and collective resources and team level outcomes in the form of distributed leadership and team learning.

The research frameworks outlined above raise expectations that distributed leadership will lead to improved organisational capacity effectiveness. However, apart from Louis’ et al. (2009) “Simplified Job Characteristics Model”, the relationships outlined in these heuristics have not been empirically tested. Empirical research evidence that does suggest a causal connection between multiple leadership practices and performance outcomes is explored in the next section.

### 2.9.3 Distributed Leadership Research Findings

There is a modest but steadily growing body of literature on distributed leadership, with research strongest in the field of education. Some authors (Harris 2008; Spillane 2006; Spillane & Diamond 2007) have used a small amount of data in the shape of vignettes to illustrate a distributed leadership perspective on how to lead and manage schools. The purpose of this work, while informative, was not designed to address empirical questions and is therefore not included in this analysis of distributed leadership research.

A summary of the empirical research on distributed leadership is provided in Appendix B. What is apparent is that, while there is some variety in terms of the scale and focus of studies, most of the empirical studies are forms of qualitative case studies, many of which are small scale and conducted in school settings. The focus of these case studies ranges from reports which examined the improvement of literacy outcomes for students (Timperley 2005), to conditions for school improvement capacity (Heck & Hallinger 2010) and organisational learning (Silins & Mulford 2002). However, at the same time there are some exceptions to this trend with a small handful of scholars who have explored the notion of distributed leadership in a variety of organisational and team settings. These studies have incorporated not-for-profit (Inglis 2004; Inglis & Sarros 2003), local government (Currie, Grubnic & Hodges 2011) and municipal government agencies (Zhang & Faerman 2007), hospitals and health care (Buchanan et al. (2007) Currie & Lockett 2011; Fitzgerald et al. 2013. Other authors have explored the dispersion
of leadership roles within a diversity of teams, including self-managed project, research and development, medical and top management teams (Barry 1991; Brown & Gioia 2002; Lindgren & Packendorff 2011; Rydenfalt et al. 2015).

One of the significant points of difference within this body of research is whether authors have a descriptive or alternatively a normative purpose. It appeared that most authors apply a descriptive lens to distributed leadership and focus on whether and in what form leadership is distributed in organisations. These researchers were interested in how leadership is distributed rather than providing evidence that such forms necessarily lead to positive outcomes or benefits of those distributed forms. These descriptive works focused predominantly on distributed leadership at an organisational level and included examples of hybrid forms of both individualised and disturbed patterns (Anderson, Moore & Sun 2009; Currie, Grubnic & Hodges 2011; Currie, Lockett & Suhomlinova 2009; Leithwood & Mascall 2008; Louis et al. 2010; Mulford, Silins & Leithwood 2004; Spillane, Camburn & Pareja 2009), “planfully aligned structures” (Leithwood et al. 2007; Louis et al. 2010, Mascall et al. 2009) and “co-principalship” constellations evident at both the top echelons of schools or leadership configurations stretched within and between all organisational levels (Anderson, Moore & Sun 2009, Buchanan et al. 2007; Blasé & Blasé 1999; Camburn, Rowan & Taylor 2003; Gronn & Hamilton 2004, Leithwood & Mascall 2008, Moller & Eggen 2005, Spillane, Camburn & Pareja 2009; Spillane et al. 2009; Timperley 2005). While there has been a growing body of evidence to suggest that distributed leadership practice is an emerging form within organisations, researchers found it more challenging to provide empirical evidence highlighting the specific antecedents and outcomes associated with distributed leadership at an organisational level. Variables that appear to be important facilitating factors include aspects of culture (Timperley 2005), the beliefs of the formal leader (Anderson, Moore & Sun 2009; Louis et al. 2010), levels of support (Hulpi, Devos & Van Keer, 2011) and trust (Loius et al. 2009; Moller & Eggen 2005), the dispersal of knowledge and expertise within schools (Firestone & Martinez 2009), a departments subject area (Spillane 2005) and the level of interdependence within a team (Zhang & Faerman 2007).

In contrast to the large quantity of descriptive material, a relatively small body of research has adopted a normative orientation and explored whether distributed leadership does in fact constitute a desirable or effective form of leadership and contribute to improved organisational outcomes. Studies have generated mixed and sometimes contradictory results. The empirical association between distributed leadership in schools and the improvements in the knowledge skills and abilities of students is inconclusive (Hallinger & Heck 1996; Heck & Hallinger 2009;
Heck & Hallinger 2010; Leithwood & Jantzi 2000; Silins, Mulford & Zarins 2002; Tian, Risku & Collin 2016; Louis et al. 2010). However, some researchers have found distributed leadership to be positively associated with mediating variables such as organisational learning (Dinham, Aubusson & Brady 2008; Mulford, Silins & Leithwood 2004; Silins, Mulford & Zarins 2002), teacher’s academic optimism (Chang 2011) and positive working relationships (Louis et al. 2010) and motivation and commitment (Day 2009; Hulpia & Devos 2010; Leithwood & Mascall 2008).

At the same time, other authors have explored the links between distributed leadership patterns and organisational outcomes in healthcare, rather than school systems. These studies, conducted by Buchanan et al. (2007) and Fitzgerald et al. (2013), found that distributed leadership contributed to positive service improvements particularly in relation to the quality, safety and responsiveness to patient care. Collectively, these findings are encouraging as they suggest that distributed leadership practice is an important predictor of specific attitudinal, behavioural and cognitive variables at both an individual and organisational level and they intimate that leadership and organisational capability and capacity can be positively influenced through distributed leadership dynamics.

2.9.4 Distributed Leadership in Teams

The distributed leadership research described earlier uses the organisation as the appropriate unit of analysis to give form to distributed leadership activity. However, viewing distributed leadership as an emergent property of a group or a network of interacting individuals does not preclude the examination and influence of distributed leadership in teams. A small collection of researchers has examined different dimensions of distributed leadership in teams. The first group has emphasised the patterns, characteristics and some outcomes of the distributed leadership practice within top management or executive teams. This work extends from the examination of dyads through to the collective impact of pooled leadership dynamics. In a descriptive case study of the distributed leadership pattern within an Australian Catholic girls’ school, Gronn and Hamilton (2004) concluded that the concertive work relationships of “co-principalship” had positively affected the school’s organisational capability and provided important role modelling.

While this investigation focused on shared leadership at the very top of a school organisation, other research has examined the collective dynamics and impact of a school’s senior leadership team (SLT). In a case study of nine different schools in the UK, Bush and Glover (2012) investigated the characteristics of high performing SLTs. They concluded that many of the SLTs had a hybrid form of distributed leadership that mixed both individual and team leadership. Their results also indicated that distributed leadership was most prevalent in teams where there
was stability and continuity and high levels of trust and shared values. Hulpia and Devos (2010) compared high performing and low performing schools in Belgium. Their results emphasised the importance of having positive relationships, participative decision making and distributed leadership in the form of concertive action within the school’s SLT. These factors not only differentiated high from low potential schools, but they were also shown to have a direct impact on levels of teacher commitment. The level of cooperation and cohesion within the school’s executive team was also shown to influence the degree to which teachers made sense of distributed leadership initiatives and got involved in those initiatives at school (Hulpia, Devos & Van Keer 2001; Louis et al. 2009).

An analysis of distributed leadership within the echelons of top management teams (TMT) has also been highlighted by Brown and Gioia (2002), Inglis (2004) and Inglis and Saros (2003). This body of research focused attention on a dot-com company (Brown & Gioia 2002) and voluntary groups in Australia (Inglis 2004; Inglis & Saros 2003). Several themes are highlighted in these studies. Firstly, in all cases, distributed leadership was confined to the practices evident in the TMT. Secondly, in the findings outlined by Inglis (2004) and Inglis and Saros (2003), distributed leadership was viewed as an emergent property of the group and a characteristic that evolved through concertive action as group members coordinated their practices and displayed complementary interdependence through conjoint agency. Thirdly, the practice of maintaining shared role space among the top leadership positions was also found to be well suited to both external and/or internal environments characterised by ambiguity, speed and complexity (Brown & Gioia 2002).

The importance of distributed leadership processes and concertive action has also been illustrated in the context of successful teams comprising different specialists and professionals working together in hospital operating theatres. While the leadership behaviours and roles exercised by different actors were varied, Rydenfalt et al. (2015) concluded that “leadership in the operating room can be considered distributed, rather than being associated with a specific leader” (p. 455). The authors determined that what was most important in these teams were the processes and dynamics that promoted leadership to attain flexibility and adaptability to ensure success in the operating room. Leadership in this environment became a distinctly emergent phenomenon rather than something inherent and embedded in the role of the senior surgeon who was the assumed formal leader.

In a similar vein, distributed leadership practices have also been found to be an integral process within different types of project teams. For example, Dinham, Aubusson, and Brady (2008)
discovered that successful “Quality Teaching Action Learning” projects were characterised by effective team building, teams and distributed leadership. They concluded that distributed leadership was not only a contributing factor in developing effective teams and action learning, but it was also an outcome of the action learning and team processes. In addition, while the aim of Lindgren and Packendorff’s (2011) single case study of a Research and Development project team (BioCorp) was not to draw conclusions about the most effective patterns of leadership interactions, they did emphasise that distributed leadership positively impacted on R&D project management and organisational change. The authors viewed project management and leadership practices such as the creation and invention of ideas as an outcome of a distributed leadership culture “collectively constructed and integral to the continuous co-production of the organisation” (Lindgren & Packendorff’s 2011, p.168).

Another important study was undertaken by Scribner et al. (2007). It incorporated elements of both distributed and shared leadership, highlighting that distributed leadership within schools is expressed and developed through the sharing of leadership practices in teams. Teacher teams were viewed as the dynamic, situational structures that facilitate shared governance in schools. The sharing of leadership within these teams was regarded as an emergent activity that was founded through social interactions, which were simultaneously structured and spontaneous in nature (Scribner et al. 2007). Understanding the patterns and processes of these reciprocal interactions was deemed to be “critical to enhancing our conceptual grasp of the nature of distributed leadership in organisations” (Scribner et al. 2017 p. 73).

Scribner et al. (2017) researched those patterns and processes by using both discourse and comparative analysis in their observations of two teaching teams working within a large comprehensive high school in the United States. They found that sharing leadership within these professional learning teams (PLT) was dependent on the purpose of the team, the level of autonomy within which the team operated and the patterns of discourse between team members. For example, discourse analysis indicated that one PLT given restricted boundaries, a defined narrow purpose (instructional improvement) and complete autonomy, tended to remain focused on solving a well-defined problem. The prevailing organisational conditions of closed purpose and enabling autonomy encouraged active discourse leading to substantive action within the group. This narrow focus however limited the shared and total leadership influence this group could exert. Consequently, the shared leadership practices in this team did not support the effective team level outcomes identified by the authors as creativity, improvisation or innovation. In this instance both external and internal situational factors served to constrain the possibility of shared leadership activity because the collaborative
structures were stifled by prescriptive expectations and control. In contrast a different PLT, which was constructed to determine why different groups of students were persistently failing, had a less defined sense of autonomy and purpose. This group demonstrated strong commitment as members shared leadership through the dissemination of information and active and creative problem solving. However, at the same time organisational conditions hampered and subverted the generation of those solutions. While there was a great deal of sharing of ideas and problem identification, there was also a lack of substantive action. This, the authors believed, was because this PLT was given a broad remit and open purpose and at the same time a disabling autonomy. The authors concluded that both teams provided examples of the complexity of distributed leadership. They suggested that the purpose and autonomy, manifested as organisational conditions, largely shaped the discourse that characterised the shared influence and interaction of team members. The differing nature of group functioning offered important insights, particularly regarding the impact of different situational contexts and internal social dimensions of distributed influence in PLT.

What this cluster of descriptive research has highlighted is that effective distributed leadership practices are characterised by complex social phenomena and concertive action. In addition, this form of plural leadership is a collective source of leadership to others and can have some impact on organisational level factors. While this work (Brown & Gioia 2002; Dinham, Aubusson & Brady 2008; Gronn & Hamilton 2004; Hulpia & Devos 2010; Hulpia, Devos & Van Keer 2011; Inglis 2004; Inglis & Saros 2003; Lindgren & Packendorff 2011; Louis et al. 2009; Rydenfalt et al. 2015; Scribner et al. 2007) has contributed to illustrating the importance of context and the dynamic nature of plural leadership within a team, it does little to assist in garnering an understanding of whether these distributed leadership constellations in teams enable preferable outcomes in organisational settings. This important aspect of empirical research is limited to two research scholars who have examined the causal connection between distributed leadership in teams and specific team outcomes.

Using comparative case studies Barry (1991) concluded that the difference between successful and unsuccessful self-managed teams was attributed to the emergence of multiple leaders who concomitantly or sequentially undertook different types of leadership roles within a group. These leadership types included organising, spanning, envisioning and social leadership. The more successful team was characterised by the high quality of their ideas and the speed at which the team moved ahead. As synergy between team members evolved and leadership emerged voluntarily, the level of team member’s excitement and satisfaction rose. Not surprisingly that team successfully demonstrated their prototype of an imaging device, which
soon went into production. According to Barry (1991), this task outcome was achieved because a system of distributed leadership was clearly in effect. In contrast, the leadership dynamics evident in the unsuccessful team indicated that several key leadership types, such as social leadership, were missing. This deficit resulted in an inability to resolve member differences and an unwillingness to accept the concept of distributed leadership within the team.

The comparative case study conducted by Barry (1991) suggested strong associations between distributed leadership in teams and positive team outcomes. However, more recent research undertaken by Mehra et al. (2006) found this association was not quite as direct and straightforward. Their analysis examined the emergent network of leadership patterns within 28 sales teams. The use of social network analysis by Mehra et al. (2006) enabled the authors to delineate the leadership structure of groups and evaluate the different impact those distributed leadership structures had on team performance. They concluded that the mean for team sales and team satisfaction was not significantly higher for teams that displayed distributed leadership. However, results did indicate that teams that exhibited distributed coordinated leadership achieved higher sales than those that had leader-centred or fragmented structures. Furthermore, the authors discovered that satisfaction scores were also higher in teams that displayed distributed coordinated leadership when compared to teams with distributed fragmented structures.

By testing relationships between different team level leadership roles, structures and team performance, these two studies have added an important dimension to the sparse empirical literature on distributed leadership in teams. The early research undertaken by Barry (1991) has emphasised that effective plural leadership practice in teams is a collection of complementary roles that are fulfilled, rotated and coordinated by emergent leaders who surface at different times within the team. Furthermore, the more recent study undertaken by Mehra et al. (2006) has provided much needed attention to the dynamics and patterns of distributed leadership. What this work has demonstrated is that all forms of distributed leadership are not the same and do not necessarily correlate with higher team performance outcomes.

2.9.5 Summary of Distributed Leadership Research

Distributed leadership researchers have predominantly focused on examining school settings at an organisational level of analysis and have primarily reported their findings as descriptive case studies. What the descriptive research has shown is that distributed leadership is common in schools and that it evolves within the context of challenging and changing environments. At the same time the sources of distributed leadership often appear in quite different patterns and take hybrid forms alongside more traditional and vertical leadership practices. Alternatively,
studies that have taken a normative view have focused on identifying those distributed leadership patterns that exert positive impacts on a variety of school improvement criteria. While the effects of distributed leadership on student learning outcomes have shown mixed results, the impact on teachers has been shown to be more consistently positive; particularly in the areas of organisational learning, academic optimism and motivation and commitment. These studies illustrate a plural form of leadership in which leadership roles are fluid, emerged and rotated among people. Research, that has explored the combined influence of multiple leaders at an organisational level, has formed an important backdrop to the distribution of leadership within teams. Those scholars who have explored distributed leadership at the team level have focused on either pooled leadership groups at the “top” of organisations, PLTs or self-managed teams. Preliminary findings indicate that structurally plural executive groups can become a collective source of leadership for people outside the executive team. However, it appears that their collective influence is likely to be more effective if group members display interdependence in the form of concertive action. Variables that were found to be associated with the performance of self-managing teams and PLTs included specific patterns of distributed leadership, the importance of both situational and social forms and the dispersal and complementarity of specific leadership roles.

Distributed leadership research at a team level invites questions about how people work together in groups to make leadership happen. These findings point towards the importance of capacity building and the developing potential of group members pooling their expertise. The research information outlined above identifies the effect of distributed leadership network structures, interdependence and leadership dynamics on team level outcomes. More investigation is needed to understand the processes of distributed leadership in teams and the conditions that facilitate those processes and enable performance outcomes. The work on distributed leadership in teams demonstrates a strong confluence with heuristic and research findings that have been explored around shared leadership. This stream of plural leadership provides an additional opportunity to understand how the emergence of collective agency in groups can enable improved performance outcomes.

2.10 The Shared Leadership of Teams
Shared leadership is another contemporary team-as-a-whole phenomenon (D’Innocenzo, Mathieu & Kukenberger 2016) and shared leadership research has advanced our understanding of how processes of plural action can enable leadership within teams and by teams. Shared leadership is viewed as an emergent team property of mutual influence and shared functional responsibility among team members (Carson, Tesluk & Marrone 2007; Ensely, Hmieleski &
Pearce 2006; Hoch, Pearce, & Welzel 2010; Pearce & Conger 2003; Pearce & Sims 2002; Sivasubramaniam et al. 2002). Although team members lead each other toward achieving the team’s goals, the processes involving shared leadership differ from those of teamwork. While teamwork is recognised as a complex multidimensional construct (Salas, Burke & Cannon-Bowers 2000), the processes underlying team work evolve through the co-ordination of collective interdependent actions that convert team “inputs to outputs through cognitive, verbal and behavioural activities directed toward organizing task work to achieve collective team goals” (Marks, Mathieu & Zaccaro 2001, p. 357). Alternatively, shared leadership makes explicit the dynamic interactive influence process and distributed responsibility among team members (Carson et al. 2007; Pearce & Conger 2003).

The purpose of this section is to review both conceptual frameworks and empirical research that focuses on shared leadership in teams and its relationship with team processes, emergent states and affective and performance outcomes. In addition, this discussion will also review the small array of studies that have directly focused on antecedent conditions, or mediators and moderators of the relationship between shared leadership and team performance. This section is divided into three broad segments which focus on reviewing a relatively small number of empirical researches around shared leadership in teams: conceptual models and research paradigms; qualitative research findings; and finally, an analysis of empirical studies that employed quantitative research approaches.

2.11 Shared Leadership in Teams -Conceptual Models and Research Paradigms

Scholars have adopted several approaches to the study of shared leadership practices within teams. These research paradigms seek to support an association between shared leadership as a team-level phenomenon and a variety of specific independent and dependent variables.

Scholars have in general applied an inductive research approach with most of the conceptual frameworks viewing shared leadership as an emergent state or mediating causal variable located between different categories of antecedents and varying group outcomes. These associations, which are summarised in Appendix C, are framed within the context of team-based structures that included a diversity of different types, such as top management, cross-functional and sales teams, some of whom were globally dispersed.

Within these conceptual frameworks, few scholars have focused attention on which specific leadership practices and behaviours are transferred, distributed or enacted by multiple individuals within teams. For example, the premise of Burke, Fiore and Salas’s (2003) framework is the contention that the transference of leadership styles and functions will vary because of
the requirements of the work and stage of team development. While the authors provide a lengthy explanation of the role that shared cognition plays in enabling shared leadership practice, there is limited discussion specific to the types of interactive leadership influence among and between individuals in teams. Similarly, while Bligh, Pearce and Kohles (2006) emphasise that “shared leadership thus offers a concept of leadership practice as a team-level phenomenon where behaviours are enacted by multiple individuals” (Bligh, Pearce & Kohles 2006, p. 305), no definition of those leadership behaviours is provided.

In contrast, a small number of research models do include an outline of specific types of shared leadership behaviours. These frameworks propose that shared leadership actions be measured by examining the distribution of transactional, transformational, directive, empowering (Cox, Pearce & Perry, 2003; Pearce & Sims 2000; Perry, Pearce & Sims 1999), aversive influences (Pearce & Sims 2000) and social support practices (Perry, Pearce & Sims 1999) within teams. While this typology represents much of what has appeared within the established literature on vertical leadership, Pearce (1997) suggests that these forms of leadership influence can also be projected laterally as dynamic interactive influence processes within teams. A number of these different types of influencing behaviours have been refined by Perry, Pearce and Sims (1999) and Pearce and Sims (2000). These authors have emphasised two scales of shared leadership behaviours, which they believe are shared influence processes distributed within groups. The first is labelled “Controlling Leadership”, in which they incorporated aversive, directive and transactional behaviours, and the second category, which is comprised of both transformational and empowering behaviours they classified as “Catalysing Leadership”. The assessment of these multiple dimensions of shared leadership was central to Cox, Pearce and Perry (2003), Pearce and Sims (2000) and Pearce, Perry and Sims’ (1999) exploratory frameworks and is viewed as an attribute that can be reliably measured within teams.

The research paradigms illustrated above not only emphasise the importance of how shared leadership practices are measured, but they also accentuate the factors likely to impact on and be impacted by shared leadership in teams. The conceptual models highlighted in Appendix C provide a variety of dependent variables, which are posited to be affected by the distributed enactment of leadership practices in teams. This range incorporates group level affective states, such as collective efficacy and satisfaction (Cox, Pearce & Perry 2003; Perry, Pearce & Sims 1999; Pearce & Sims 2000; Zhu et al. 2016). These are assumed to emerge and combine with positive cognitive and behavioural factors that include team cohesion, citizenship behaviours, effort, commitment and trust (Cox, Pearce & Perry 2003; Dust & Ziegert 2016; Ensley, Pearson
Several conceptual models also emphasise a diversity of group level performance or effectiveness outcomes. How authors evaluate the impact of shared leadership is dependent on which subjective or objective elements of team effectiveness are valued and therefore measured. Several theoretical frameworks emphasise quantitative measures such as improvements in team self-ratings, customer quality ratings and manager ratings of group effectiveness (Cox, Pearce & Perry 2003; Pearce & Sims 2000; Perry, Pearce & Sims 1999; Zhu et al. 2018). Other scholars have focused attention on different qualitative improvements in team performance such as an enhanced problem-solving capacity, growth in innovation and knowledge creation, greater diversity of thought and the development of leadership potential in teams (Bligh, Pearce & Kohles 2006; Dust & Ziegert 2016; Friedrich et al. 2009).

While qualitative team performance measures are often variables that are applicable to different types of teams, quantitative outcomes frequently reflect a team’s specific design and purpose. Consequently, the list of quantitative performance outcomes is strongly linked to the types of teams examined in each of the conceptual frameworks. For example, Perry, Pearce & Sims (1999) focused on the context of selling teams in which quantitative factors included sales volume, profitability, customer retention or new customer numbers. Alternatively, Cox, Pearce and Perry’s (2003) theoretical model examined the role of shared leadership in new product development teams and therefore emphasised metrics that benchmarked the quality, costs, ease of use and maintainability of new products.

While evaluating the impact of shared leadership in teams is clearly dependent upon the nature of the qualitative and quantitative outcomes that are measured, the relationship is also potentially affected by a few moderating variables. Several theoretic constructions have highlighted potential moderators and describe how they may affect the relationship between shared leadership in teams and group outcomes. One set of moderators includes task characteristics. Scholars have hypothesised that the degree of task complexity and the associated level of interdependence between team members both directly affect the extent to which shared leadership translates into team effectiveness (Bligh, Pearce & Kohles 2006; Cox, Pearce & Perry 2003; Zhu et al. 2018). The role of the vertical or formal leader is also viewed as an important moderator by Perry, Pearce and Sims (1999). Vertical leaders have a significant impact on the effectiveness of shared leadership processes by influencing the distribution of power and authority onto and within teams. These three moderators are postulated as having
an important direct impact upon the level of integration and interconnectedness between individuals within teams and, therefore, in determining the strength of shared leadership practice and its effect on group level outcomes.

The conceptual frameworks outlined in Appendix C also highlight a variety of proposed conditions and antecedents that may facilitate shared leadership in teams. These variables combine elements of existing literature on leadership with recent research on the performance and effectiveness of teams in organisations. These factors examine an array of individual, team, task and contextual characteristics that are assumed to create conditions that enable shared and reciprocal influence in teams. Scholars have identified a variety of salient organisational or contextual variables, which included characteristics of the external environment (Friedrich et al. 2009; Muethel & Hoegl 2010), internal systems (Friedrich et al. 2009; Pearce & Sims 2000) and institutional diversity (Muethel & Hoegl 2010).

Another group of identified antecedents of shared leadership are team characteristics. These aspects include the breadth and depth of collective knowledge, skills and capabilities within the team (Cox, Pearce & Perry 2003; Perry, Pearce & Sims 1999; Pearce & Sims 2000) and the level of diversity among members of the team (Cox, Pearce & Perry 2003). Conditions that affect the lateral influence within teams are also viewed as important. This include variables such as physical proximity between members (Cox, Pearce & Perry 2003; Pearce & Sims 2000), the size, stage of the project life cycle and maturity of the team (Cox, Pearce & Perry 2003; Perry, Pearce & Sims 1999; Wu & Cormican 2016), Leader Member Exchange differentiation (Zhu et al. 2018) and the degree of shared metacognition among team members (Burke, Fiore & Salas 2003). A few authors have also emphasised team level affective states as antecedents. These include collective efficacy and collective orientation (Burke, Fiore & Salas 2003), group trust, potency, perceived team support and commitment (Bligh, Pearce & Kohles 2006; Friedrich et al. 2009; Hoch & Dulebohn 2013). The significance of these emotional states has also been highlighted as an individual level variable by Bligh, Pearce and Kohles (2006) and Hoch and Dulebohn (2013). These authors proposed that team members are strongly affected by the interactions they have with one another and the distribution of shared leadership influence will therefore be impacted by varying intensities of individual trust, proactivity, self-efficacy, commitment and self-leadership capacity.

The influence and importance of individual vertical leadership behaviours has also been stressed by Cox, Perry and Pearce (2003), Friedrich et al. (2009) and Pearce and Sims (2000). Unlike Perry, Pearce and Sims (1999), these authors developed conceptual frameworks that
positioned vertical leadership influences as a critical antecedent that could potentially affect the emergence of shared leadership relationships in teams. Vertical leadership processes include team formation, boundary management and the establishment of systems of support and reward. Exploring these and other vertical leadership processes may assist in developing a greater understanding of activities and roles that will either impede or catalyse the development of shared leadership in teams.

In conclusion, the conceptual models described above assist researchers in understanding the following three elements. Firstly, those factors that facilitate the display of shared leadership in teams; secondly, the most conducive influencing behaviours and relationships within the context of shared leadership; and finally, the effect of shared leadership on group behaviours, affective states and performance. The conceptual frameworks attempt to clarify the role of shared leadership as a critical mediating variable in the development of important team outcomes. In addition, there is an implication that the combination of antecedents and specific shared leadership behaviours has the potential to generate higher team level performance. While these conceptual models assist in enabling an understanding of shared leadership as an emerging theoretical phenomenon, this domain of shared leadership research is relatively small and dominated by a limited number of overlapping research partnerships. Further conceptualisation and empirical exploration of the interplay between these variables will be important in developing a greater understanding of the positive outcomes, critical and complex interrelationships and conditions associated with shared leadership in teams. A modicum of empirical work has advanced this conceptual understanding and has qualified some of the relationships between antecedents, shared leadership practices and collective outcomes outlined within the conceptual models. A review of this empirical research provides further understanding of the role of shared leadership in organisational systems.

2.11.1 Shared Leadership: Qualitative Research Findings

While qualitative research in shared leadership has predominantly been focused upon the empirical investigation of mutual influence within teams, a summary of qualitative research provided in Appendix D illustrates that there are a small number of studies which have investigated shared leadership practice at the inter-organisational (Weibler & Rohn-Endres 2010) or organisational (Manz et al. 2010; Manz, Shipper & Stewart 2009; Ropo & Sauer 2003) levels. This research highlighted that “high-quality relational micro processes” (Weibler & Rohn-Endres 2010, p. 192) between actors formed the foundation for developing shared leadership between and within organisational hierarchies and had a powerful effect on organisational performance outcomes. This body of qualitative work also pointed to some fundamental
conditions and practices that promoted shared leadership throughout and between all levels within organisations. This included organisational cultures that engendered shared responsibility, the primacy of ideas over positional authority, teamwork and a broad sense of community (Manz et al. 2010; Ropo & Sauer 2003). These findings not only support much of the empirical research undertaken in distributed leadership (Hulpia & Devos 2010; Leithwood & Mascall 2008; Mulford, Silins & Leithwood 2004; Silins, Mulford & Zarins 2016) but also provide an important backdrop for a small cohort of qualitative researchers who have specifically focused attention on shared leadership practices in teams.

2.11.2 Qualitative Research Findings; teams

A cluster of qualitative studies illustrated in Appendix D has further developed our understanding of both the potential precursors and the performance outcomes associated with shared leadership as a collective activity. Several authors have used teams as a unit of analysis and have investigated how the relationships between team leader activity, environment, shared leadership and team processes have combined to impact aspects of team performance.

Within this group of research three separate case studies examined different types of senior management teams. One of these case studies focused upon a representative employee steering committee, which worked with senior managers to enable important policy and strategic direction in a suburban Police Department in Oklahoma (Steinheider & Wuestewald 2008). The other two exploratory studies investigated the processes that underlay the performance of senior leadership teams in three government secondary schools in New South Wales (Barnett & McCormick 2012) and four British primary schools (Wallace 2001).

The nine remaining empirical works explored evidence of shared leadership practice within very different teams. Two studies investigated shared leadership dynamics within hospitals. The first explored the Mayo Clinic’s unique team service model (Berry 2004) and the second expressed leadership dynamics within medical trauma units located in a hospital in the United States (Klein et al. 2006). An alternative paper studied the processes of shared leadership in 45 ad hoc decision-making teams, which comprised of 180 university students at a south-eastern university in the United States (Bergman et al. 2012). A more recent body of research developed by Serban and Roberts (2016) also utilised teams of university students to explore the antecedents and outcomes of shared leadership practice in creative environments. Another focused upon a team of research scientists operating within an astrophysics research laboratory (Hooker & Csikszenmtihalyi 2003). Two case studies also reported on the leadership dynamics found in different areas of defence. The first examined leadership behaviours within integrated product teams managing the acquisition of modernised military equipment for the US
Department of Defence (Novikov 2016). The other explored leadership dynamics within teams of cadets participating in the Israel Defence Forces (IDF) Officer Training School (Shamir & Lapidot 2003). Finally, Al-Ani, Horspool and Bligh (2011) researched the phenomena of shared leadership within virtual teams set within a multi-organisational context and Park and Zhu (2017) investigated the dynamics of shared leadership within self-managing consulting project teams.

The qualitative investigations undertaken in these cases included collection of data by semi-structured interviews, observations and the examination of documents or archival information. The analysis of this data included the use of grounded theory methodology (Klein et al. 2006); coding software, thematic analysis, schemes and behaviourally anchored rating scales (Barnett & McCormick 2012; Bergman et al. 2012; Hooker & Csikszentmihalyi 2003; Park & Zhu 2017; Serban & Roberts 2016; Wallace 2001); the examination of critical incidents (Shamir & Lapidot 2003); and pre-post-test design (Steinheider & Wuestewald 2008).

This set of studies has highlighted several contextual and mediator variables that influenced the effectiveness of shared leadership in teams and team performance outcomes. The development of shared leadership practice within the three-school senior executive teams (Barnett & McCormick 2012; Wallace 2001), the Mayo Medical Clinic (Berry 2004) and the Police Department Steering Committee (Steinheider & Wuestewald 2008) all emerged because of increasingly complex operating environments that necessitated effective problem solving, unity and open communication. In addition, the qualitative investigations which examined the shared leadership dynamics within the astrophysics laboratory (Hooker & Csikszentmihalyi 2003) revealed a “knowledge organisation” operating within a fiercely competitive environment. Consequently, the survival of the laboratory was highly dependent upon the quality and amalgamation of information, ideas and innovation from team members. The quality of the internal team environment was also found to be an important contributing factor to the development of shared leadership practice in student teams undertaking creative tasks. Drawing on this data, Serban and Roberts (2016) concluded that within the context of undertaking creative tasks, the team’s internal environment and task cohesion were predictors of shared leadership practice. A similar conclusion was drawn by Park and Zhu (2017) who emphasised the importance of team trust and an open communication climate within self-managing project teams. Finally, Klein et al.’s (2006) exploration of shared leadership dynamics within the trauma resuscitation units revealed conditions that were highly complex, challenging and unpredictable. The composition of trauma teams changed repeatedly so that members were often unfamiliar with one another. At the same time teams needed to provide effective
treatment for patients and this necessitated adaptation, swift coordination and reliable performance.

The structure and characteristic of the various teams was also found to facilitate the emergence of shared leadership processes. In several case studies teams were relatively small but contained individuals who were competent and had a diversity of skills and expertise (Barnett & McCormick 2012; Hooker & Csikszentmihalyi 2003; Klein et al. 2006; Wallace 2001). The work undertaken by team members required an interconnection of collective ideas and information sharing. Consequently, shared mental models evolved within teams and this enabled individuals to recognise when leadership responsibilities needed to be transferred (Barnett & McCormick 2012; Klein et al. 2006).

The combination of different team characteristics and contextual factors united to facilitate the evolution of different forms of shared leadership processes in the various teams. The first type of interactive mutual influence was characterised by transference of the leadership role from one team member to the next. This dynamic process was poignantly illustrated by Klein et al. (2006) who described the active leadership processes within the trauma resuscitation unit as “a dance in which three team leaders step forward or back in response to the patients changing condition and the actions, competence and confidence of others” (Klein et al. 2006, p. 607).

The second type of shared leadership influence highlighted a pattern of emergent engagement and collaboration between team members. Evidence provided by Hooker & Csikszentmihalyi (2003) demonstrated that the diverse skills and expertise of scientists led to different individuals consulting with various members of their research team to meet project demands. This shared engagement, mutual influence and collective information exchange facilitated an “uncommon sense of ownership over the outcome of the group’s work” (Hooker & Csikszentmihalyi 2003, p. 226). Similar findings were also described by Bergman et al. (2012) who reported that teams that developed a pattern of leadership behaviour, which included numerous types of leadership (that is task oriented, relations oriented, boundary spanning) and multiple leaders, experienced significantly better intermediate team processes and emergent states. The kernel of this form of shared leadership was the interconnectedness and synergy of skills, information and ideas across the whole team to enable a collective outcome.

The third type of shared leadership described processes in which team members acted jointly and responded as a group. This form of plural action was illustrated by Barnett and McCormick (2012) who found that the actions of some senior executive leadership teams displayed collective leadership expertise. In these examples team members decided to do something
together and acted more like a single agent. The responsibility for directing and managing became a collective effort shared among team members. This form of plural leadership provided “an extra leadership resource for the team” (Barnett & McCormick 2012, p. 667) and reinforced the development of an occupational community with shared collective standards and values (Shamir & Lapidot 2003).

The findings from the case studies described above suggest that leadership may be transferred among team members (Klein et al. 2006), emerge because of lateral and reciprocal exchange (Hooker & Csikszentmihalyi 2003) or be exercised collectively by the whole team (Barnett & McCormick 2012; Shamir & Lapidot 2003). Evidence also suggested that the role of the formal vertical leader significantly mediated these functional, emergent and collective shared leadership practices. Formal leaders were found to have established a culture of empowerment, inclusion and ownership (Barnett & McCormick 2012; Hooker & Csikszentmihalyi 2003; Shamir & Lapidot 2003; Wallace 2001) and set the agenda, purpose, framework and structure that provided the opportunity for shared leadership to emerge within team processes (Barnett & McCormick 2012; Hooker & Csikszentmihalyi 2003; Steinheider & Wuestewald 2008; Wallace 2001). Formal leaders were also found to act as gatekeepers by controlling the transference of the leadership roles. At other times, the formal leader assumed an active leadership role and by doing so explicitly withdrew shared leadership opportunities for those within the team (Klein et al. 2006; Wallace 2001). In these instances, the shift in leadership processes was primarily driven by conditions such as urgency, novelty and the skills, values and beliefs of those participating in the shared leadership dynamics of the team (Klein et al. 2006; Wallace 2001). Some case studies also expressed a tension for formal leaders between providing team members with the freedom and support to enable emergent shared leadership practices and the need for hierarchical leadership control (Klein et al. 2006; Steinheider & Wuestewald 2008; Wallace 2001). In others, the emergence of different forms of shared leadership in teams complemented the formal leader’s role and enabled the vertical leader to operate more effectively because leadership responsibilities were shared (Barnett & McCormick 2012; Hooker & Csikszentmihalyi 2003; Shamir & Lapidot 2003). While shared leadership was evident in all case studies some evaluations also illustrated that both vertical and shared forms operated in conjunction (Al-Ani, Horspool & Bligh 2011; Barnett & McCormick 2012; Klein et al. 2006; Steinheider & Wuestewald 2008; Wallace 2001).

This small contemporary and varied array of qualitative studies has also made an important contribution to our understandings of how shared leadership impacts on various intermediating variables and effectiveness or performance outcomes. Shared leadership practices within teams
was found to increase intrinsic motivation at an individual (Hooker & Csikszentmihalyi 2003), team (Barnett & McCormick 2012; Novikov 2016) and organisational level (Steinheider & Wuestewald 2008). Increases in employee commitment in turn had a positive impact on the degree of cohesion and collective efficacy within teams (Barnett & McCormick 2012; Bergman et al. 2012), and the levels of productivity and service delivery across organisations (Steinheider & Wuestewald 2008). Qualitative findings also provided evidence that shared leadership within teams could significantly enhance affective dimensions (Novikov 2016), levels of job engagement and innovation (Park & Zhu 2017), interpersonal trust and mutual respect. Higher levels of interpersonal trust were found to be facilitated by close working relationships that developed during shared leadership activity (Barnett & McCormick 2012; Bergman et al. 2012; Hooker & Csikszentmihalyi 2003; Shamir & Lapidot 2003). These environments often evolved because formal leaders trusted team members with the autonomy to shape projects or important decisions. This culture of trust provided individuals with a sense of ownership, responsibility and engagement. At a team level, this cultivated outcomes such as creativity, an open climate and innovation (Barnett & McCormick 2012; Hooker & Csikszentmihalyi 2003).

The dynamic movement of leadership between individuals within teams also resulted in changes and developments in individual and collective cognition. Individuals developed a greater understanding of the skills, knowledge and expertise of others within teams (Barnett & McCormick 2012; Hooker & Csikszentmihalyi 2003; Klein et al. 2006; Park & Zhu 2017). In addition, team members established opportunities to learn from each other in conjunction with other team members. A shared leadership environment encouraged individuals to work in a “zone of learning, of proximal development and growth” (Hooker & Csikszentmihalyi 2003, p. 227) and it supported group members, such as those junior residents working in the trauma medical units, to develop both their active leadership role and surgical knowledge and skills through “learning by doing” (Klein et al. 2006, p. 163). The collective outcome of these processes of shared leadership and learning also enabled teams, like those in the astrophysics laboratory, to develop innovative and creative solutions and flourish in a fiercely competitive scientific environment.

Effectiveness and performance outcomes are also evident in other research findings. A flexible, dynamic and adaptive transfer of leadership roles between surgeons and resident physicians enabled trauma resuscitation units to engender important team level outcomes such as interdependence, reliable performance, in the form of effective patient care and at the same time the development of novice team members (Klein et al. 2006). This occurred despite being in an environment of complexity, unpredictability and constant membership changes. Research
findings also indicated that shared leadership practices influenced performance outcomes at an organisational level. For example, Steinheider & Wuestewald's (2008) analysis of shared leadership in a police agency showed significant improvements in proactive and discretionary police activity and attitudes. These increases in police productivity resulted in a significant decrease in community crime rates and a steady increase in levels of citizen satisfaction with the police services.

In summary, the extant qualitative research findings lend support to the notion that shared leadership dynamics within inter-organisational networks, at the level of organisational systems and in teams, has a positive impact upon some elements of group behaviour, attitudes, cognition and performance at an individual, team and organisational level. Shared leadership in these case studies was characterised by the transference of leadership expertise, the development of collaborative leadership engagement and the evolvement of joint action. However, the different shared leadership dynamics and their effect sizes are dependent upon several specific antecedents and enabling or facilitating factors. These appear to be frequently associated with features inherent to successful team interaction processes and the influence of formal leaders in providing conditions to enable the development of shared leadership expertise. It could be assumed that the absence of one or a number of these factors may limit the efficacy of shared leadership practice and potentially reduce the team’s capacity to respond to complex and novel environmental challenges.

2.12 Shared Leadership; Quantitative Research Focus

The variety of qualitative approaches outlined above have provided a rich understanding of the group dynamics associated with shared leadership in teams. However, many of these studies focus on very specific cases and sometimes in relation to issues pertinent to distinct aspects within certain organisations. Therefore, while researchers have developed some propositions regarding the conditions and dynamics associated with shared leadership in teams, there are limitations regarding generalisations that can be made about these findings. At the same time, a summary of the research shown in Appendix D illustrates a variety of quantitative approaches have been used by several authors. Their research conclusions have added support and precision to the understanding and relationships found between shared leadership practices and those variables that emerged in the qualitative material. In addition, two significant literature reviews (Barnett & Weidenfeller 2016; Park & Kwon 2013) and three meta-analyses (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al 2014; Wang, Waldman & Zhang 2014) have enhanced the collective knowledge and understanding of shared leadership in teams.
Researchers have used several different quantitative approaches to develop a rich understanding of the precursors to the evolution of shared leadership in teams. Simultaneously, empirical studies have also been used to demonstrate that shared leadership has a strong impact on variables associated with team effectiveness and performance, attitudinal outcomes, behavioural processes and emergent states. This has been established through research in a broad variety of contexts. The breadth of research is summarised in Appendix D, and includes many studies which have examined teams of university students that were formed to complete projects or simulations (Avolio et al. 1996; Balthazard et al. 2004; Berdahl & Anderson 2005; Boies, Lvina & Martens 2010; Carson, Tesluk & Marrone 2007; Carte, Chidambaram & Becker 2006; Daspit et al. 2013; Drescher & Garbers 2016; Drescher et al. 2014; Khasawneh 2011; Martin et al. 2013; Pearce, Yoo & Alavi 2004; Robert & You 2013; Sivasubramaniam et al. 2002; Small & Rentsch 2010; Solansky 2008; Taggar, Hackett & Saha 1999; Wang et al. 2017). Other authors have focused attention on middle management teams in the social services and healthcare sector (Konu & Viitanen 2008), anaesthesia teams (Kunzle et al. 2010), integrated product teams (Novikov 2016), research and development teams (Hoch & Kozlowski 2014; Liu et al. 2014), military combat teams (Ramthun 2013) and top management teams working in new venture companies (Ensley, Hmieleski & Pearce 2006), the software industry (Daspit, Ramachandran & D’Souza 2014) and independent church organisations (Wood 2005; Wood & Fields 2007). The types of teams studied have also included air crews (Bienefeld & Grote 2014), self-managing (Carte, Chidambaram & Becker 2006; Yang & Shao 1996), virtual (Carte, Chidambaram & Becker 2006) and change management teams (Pearce & Sims 2002).

While this empirical work examined a wide variety of contexts, some consensus has emerged between researchers in defining the plural nature and dynamic processes associated with shared leadership in teams. Their definitions and descriptions of shared leadership have tended to focus on either functional or behavioural frameworks.

2.13 A Functional Approach to the Measurement of Shared Leadership in Teams

Applying a functional lens to the processes of shared leadership in teams facilitates the inclusion of different aspects specific to team leadership and team research. This interface has the potential to assist scholars to understand how team and leadership processes are coordinated to enhance collective success for groups.

One group of researchers have emphasised the detailed analysis of the dispersion and rotation of leadership roles, functions, activities and responsibilities (Bienefeld & Grote 2014; Carte, Chidambaram & Becker 2006; Drescher et al. 2014; Hiller, Day & Vance 2006; Pearce & Ensley
These works acknowledge that rather than rely on the formal leader of the team, the process of leadership can derive from any member of the team who can offer the skills and talents to complete a task at the time. As the needs will vary at different times, the roles and functions within the team will change, which suggests that this form of shared leadership may benefit the team’s operation and performance.

The importance of sharing team leadership roles such as formulating a vision for the team (Ensley, Hmieleski & Pearce 2006; Locke 2003; Morgeson 2005; Yukl 2010; Zaccaro et al. 2001) and the facilitation and rotation of various leadership tasks have been shown to support team functioning (Bienefeld & Grote 2014), performance (Carte, Chidambaram & Becker 2006; Yang & Shao 1996) and effectiveness (Hiller, Day & Vance 2006; Pearce & Ensley 2004). Some of the specific team outcomes identified by researchers included increased levels of innovation (Pearce & Ensley 2004), team goal attainment (Bienefeld & Grote 2014) and team innovation and creativity (Pearce & Ensley 2004). At the same time researchers also discovered that the sharing of leadership tasks had a positive effect on specific relational dynamics in teams. These included variables such as altruism, the frequency of courteous interactions and team trust (Drescher et al. 2014; Pearce & Ensley 2004). However, authors also found that the types of leadership roles being shared in teams had an impact on the levels of team effectiveness and performance. Work undertaken by Hillier, Day and Vance (2006) concluded that the sharing of relationship-oriented roles was more consistently related to team effectiveness than task-oriented dimensions. Similarly, Carte, Chidambaram and Becker (2006) surmised that levels of commitment and positive peer relationships were important precursors to the high levels of task monitoring evident in their research findings on shared leadership in high performing virtual teams.

Scholars have also focused some attention on understanding various antecedents and control variables that might impact the evolution of shared leadership roles and functions within teams. These variables appeared to fall into three categories. The first group included factors which highlighted team member demographics and capabilities. These were listed by Carte, Chidambaram and Becker (2006), DeRue, Nahrgang and Ashford (2015) and Yang and Shao (1996) as age, work experience, educational level, the perceived differences in individual levels of competence and gender. In summary, gender, educational attainment and varying levels of competence were all found to be important determinants of the sharing of various leadership roles. The second assembly of precursors included factors associated with team structures and the stages of team development (Carte, Chidambaram & Becker 2006; Hiller, Day & Vance 2006; Yang & Shao 1996). Both the temporal phase of team development (Carte, Chidambaram
and the organic structure of self-managed teams (Yang & Shao 1996) were seen to influence the sharing of leadership roles. Alternatively, team size was not found to be significantly correlated with the sharing of leadership functions in teams (Hiller, Day & Vance 2006). The third and final cluster of facilitating variables examined aspects of team dynamics and culture, specifically the impact of power distance and collectivism on the sharing of roles across team members. While the power distance between team members was not found to significantly impact shared leadership, those teams that had more collectivist views were discovered to exhibit higher levels of shared leadership activity (Hiller, Day & Vance 2006).

2.14 A Behavioural Approach to the Measurement of Shared Leadership in Teams

It appears from the review outlined above that shared leadership can be successfully researched as more or less a rotation of specific functions according to the capacity and variety of skills within teams to implement key leadership roles and actions. However, shared leadership practices are also recognised as dynamic social processes. Therefore, it is not surprising that a second body of research has examined the characteristics of these social processes. This work has specifically examined the shared influence behaviours within teams and the relationship between those behavioural influences and aspects of group effectiveness. Those authors who have investigated this aspect of shared leadership have examined a variety of different forms of leadership influence. These forms can be classified according to their varying degrees of specificity. Perhaps one of the most indeterminate classifications of shared leadership behaviour has been utilised by Berdhal and Anderson (2005), Carson, Tesluk and Marrone (2007), Chiu, Owens and Tesluk (2016), Liu et al. (2014), Martin et al. (2013), Ramthun et al. (2013), Robert and You (2013), Solansky (2008), Taggar, Hackett and Saha (1999) and Wang et al. (2017). These researchers simply asked respondents to identify which individual in a team displayed leadership. By asking team members to reference a broad perspective of leadership behaviours rather than detailing specific leadership influences, these authors have captured participants’ personal and implicit theories of leadership. However, at the same time because the specific leadership behaviours are not outlined, it is possible that respondents captured something other than leadership such as levels of cooperation or participation of team members.

Several scholars have minimised the opportunity for variations between respondents’ attributions and understanding of leadership behaviours by developing and measuring a defined conceptualisation of those behavioural dimensions. These researchers have developed a diversity of questionnaires which asked participants to either rate their own leadership behaviours in their team (Khasawneh 2011; Konu & Viitanen 2008) or rate leadership
behaviours demonstrated by their peers (Small & Rentsch 2010; Wood & Field 2007). Their constructs of shared leadership behaviour used items that examined aspects of communication, participative decision making and problem solving, goal setting, power, encouragement, information sharing and relation-oriented leadership behaviours. Some of these instruments such as the “Shared Leadership in Work Teams Questionnaire” (Wood & Fields 2007) and the “Shared Professional Leadership Inventory for Teams” (Grille, Schulte & Kauffeld 2015) were used by a variety of scholars to explore the relationship between shared leadership in teams and team learning (Huang 2013), team effectiveness and performance (Daspit et al. 2013; Daspit, Ramachandran & D’Souza 2014). In addition, Hiller (2002) developed an array of 26 items to measure the extent of shared leadership in teams. These items focused on a combination of tasks and relation-oriented leadership with four areas that examined planning, problem solving, support and development and mentoring. This instrument was later refined by Hiller, Day and Vince (2006) and utilised by Erkutlu (2012) in his analysis of shared leadership practices in the Turkish banking sector. While these questionnaires displayed satisfactory psychometric properties and provided greater specificity in relation to types of leadership behaviours in teams, some have not been empirically replicated in other samples while others have not reported detail on the development of their scales or the validation processes in written publications.

Other researchers have attempted to overcome any shortfalls regarding the lack of replication or available information about scale development and psychometric properties by applying a more comprehensively researched and well-defined set of leadership behaviours on which to explore and test hypothesis. These authors have utilised questionnaires that reference directive, transactional, transformational and empowering leadership behaviours (Avolio et al. 1996; Balthazard et al. 2004; Boies, Lvina & Martens 2010; Ensley, Hmielski & Pearce 2006; Fausing et al. 2013; Fausing et al. 2015; Ensley, Hmieleski & Pearce 2006; Gupta, Rui & Yayla 2011; Hoch 2013; Hoch 2014; Hoch, Pearce & Welzel 2010; Ishikawa 2012; Martin et al. 2013; Nielsen & Daniels 2012; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Sivasubramaniam et al. 2002; Small & Rentsch 2010; Sun, Xu & Shang 2014; Wood 2005). Each of these categories of leadership behaviour is well represented in the established and emerging leadership literature and it would seem likely that these behaviours would be present and shared in teams. The examination of these four behaviours has evolved from two traditional leader typologies. The first of these was developed by Bass and Avolio (1990). Their original instrument called the “Multifactor Leadership Questionnaire” (MLQ) was designed to measure and provide feedback for individual formal leaders about their transactional and transformational behaviours. More recently the development and validation of the “Team Multifactor Leadership Questionnaire”
(TMLQ) by Avolio et al. (1996) and Bass and Avolio (1995) has extended our understanding of converting leadership from the individual to the collective. The 40 items included in the TMLQ provide a comprehensive measure of eight transformational, transactional and non-leadership factors for example passive/avoidant behaviour. This instrument has been used by Avolio et al. (1996), Boies, Lvina and Martens (2010), Ishikawa (2012) and Sivasubramaniam et al. (2002) to focus on the development over time of specific types of shared leadership behaviours in teams. In addition, Balthazard et al. (2004) selected specific items from the MLQ to assess transformational leadership behaviours within virtual teams.

Some researchers have used an alternative instrument containing different sub-dimensions of transactional and transformational leadership. In addition, given the complexity of the leadership phenomenon they have seen the need to expand on the transactional and transformational paradigm developed by Bass and Avolio (1994). The work of Cox and Sims (1996) and Manz and Sims (1991) has provided a theoretical foundation for this extended typology. Further refinement and validation of the original instrument was conducted by Pearce & Sims (2002), Pearce et al. (2003), and Avolio et al. (2003). Their results supported the existence of four distinct but interrelated leadership behaviours in teams (directive, transactional, transformational and empowering) and indicated that the instrument used to measure these dimensions had strong psychometric properties. This leadership behaviour survey has provided researchers with an opportunity to better understand the overall patterns of behaviour and how they interrelate in teams. Several authors have used this instrument the 'Leader Behaviour Questionnaire', to compare the impact of specific vertical leader behaviours, for example directive, transactional, transformational and empowering, with the same dimensions being examined within the domain of shared leadership (Ensley, Hmieleski & Pearce 2006; Hoch, Pearce & Welzel 2010; Hoch 2014; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004). Alternatively, both Fausing et al. (2013) and Wood (2005) used different sub-scales and dimensions to assess the extent to which shared leadership impacted team performance in Danish manufacturing teams or examine how team behaviours determined the occurrence of shared leadership experienced by pastors within Church management teams.

While the transformational-transactional model of leadership analysis has been criticised for use within a team context (DeRue 2011; D’Innocenzo, Mathieu & Kukenberger 2016; Morgeson et al. 2010) there are some benefits of using either the “Team Multifactor Leadership Questionnaire” (Bass & Avolio 1995), the “Leader Behaviour Questionnaire” (Pearce & Sims 2002; Pearce et al. 2003) or their derivatives. Most importantly, they provide researchers with multiple dimensions of each leadership behaviour all of which have been empirically tested and
validated and are well supported in the theoretical literature. Both typologies are founded on the belief that leadership is a social process that can be operationally defined at either an individual or group level of analysis. While neither of these typologies is exhaustive, they do offer a benchmark for research on shared leadership behaviours in teams and provide the opportunity for a multidimensional approach, which may yield greater insights into the nature of shared leadership within teams.

While researchers have not only measured shared leadership behaviour in teams using varying degrees of specificity and diverse behavioural dimensions, they have also analysed it by using different referents and quantitative methodologies. These have included the aggregation of individual responses about either the amount of leadership displayed by the whole team or individual assessment of other members of the team who have shown leadership behaviours. These evaluations included ratings about leadership in a generic sense or they were made in relation to specific behaviours, such as empowering, transformational or transactional leadership. Many empirical investigations listed in Appendix D illustrated this “referent shift concept” and use mean scores per team as an index of shared leadership (D’Innocenzo, Mathieu & Kukenberger 2014). Alternatively, a small but growing body of researchers has adopted a different approach to analysing the shared leadership phenomenon, which includes utilising social network measures to assess leadership links between team members. As opposed to aggregate approaches, the social network method has allowed researchers to examine both the amount (density) and the “sharedness” (decentralisation) of leadership practices in teams. These nuanced methodologies are viewed by several researchers as a more effective way to capture the multiple dyadic relationships that underpin shared leadership dynamics in teams (D’Innocenzo, Mathieu & Kukenberger 2014; Nicolaides et al. 2014).

2.14.1 Behavioural Approach-Shared Leadership Research Findings: Individual Outcomes and Emergent States

The use of a variety of different quantitative survey measures of shared leadership behaviours has enabled scholars to develop a greater understanding of how the distribution of leadership behaviours in teams can have a positive impact on team outcomes and performance. Researchers have also developed a more fine-grained understanding of which influence behaviours are the most conducive within the context of shared leadership and how these leadership behaviours are linked to performance outcomes.

In general, this handful of empirical studies suggest that the distribution of leadership behaviours within teams is an important predictor of team performance and provides a resource for teams that goes beyond the leadership of any single formal leader. The outcome
variables examined by scholars included affective states, behaviours and performance outcomes at either an individual or team level.

At an individual level, seven outcomes have been found to be associated with shared leadership in teams. The results of three separate studies have shown a statistically significant and positive association between levels of shared leadership behaviours and job satisfaction with all researchers concluding that the distribution of leadership behaviours in teams increases job satisfaction at an individual level (Avolio et al. 1996; Drescher & Garbers 2016; Robert & You 2013; Wood & Fields 2007). In addition, findings from Khasawneh’s (2011) study of Jordanian public universities indicated that shared leadership behaviours also had a positive, high and significant effect on individual levels of organisational citizenship behaviour. Similarly, Avolio et al. (1996) found shared leadership to be significantly related to the amount of extra effort each individual team member exerted on projects. Higher levels of shared leadership behaviour in teams have also been found to be related to lower levels of role conflict, role ambiguity and job stress (Wood & Fields 2007). Finally, in a study of inter-organisational teams, Gu et al. (2016), concluded that shared leadership was positively and directly related to individual creativity.

Collectively, these results demonstrate that the sharing of leadership behaviours in teams is associated with several positive individual affects. These findings also advocate that the positive benefits of distributed leadership behaviours in teams, such as greater job satisfaction and discretionary effort, can be achieved without the negative effects of role conflict, role ambiguity and associated job stress.

2.14.2 Behavioural Approach-Shared Leadership Research Findings: Group Outcomes and Emergent States

A small group of empirical studies has also provided evidence suggesting that shared leadership behaviours within teams can have a powerful effect on group processes and group cognition. In a meta-analysis of 42 independent samples of shared leadership research Wang, Waldman and Zhang (2014) concluded that shared leadership tended to be more strongly related to team attitudinal outcomes, behavioural processes and emergent states than team performance outcomes. Studies conducted by Pearce, Yoo and Alavi (2004) and Solansky (2008) provided evidence that work teams experienced less relational conflict, improved problem solving and greater social integration when leadership behaviours were shared. Several authors also found that sharing leadership behaviours in teams had a significant impact upon the collective beliefs and perceptions of team members. Research results presented by Avolio et al. (1996), Drescher et al. (2014), Hmieselski, Cole and Baron (2012), Sivasubramaniam et al. (2002), Solansky (2008), Nicolaides et al. (2014) and Pearce, Yoo and Alavi (2004), for example, found shared leadership
in teams to be positively associated with team confidence or potency, positive changes in group trusting behaviours, affective tone and collective efficacy. Shared leadership behaviours have also been shown to have a positive impact on the degree to which team members demonstrated proactive behaviours (Erkutlu 2012), levels of team cohesion, (Balthazard et al. 2004; Mathieu et al. 2015; Somboonpakorn 2011), dimensions of team creativity (Sun et al. 2016; Wu & Cormican 2016) and a desire to remain in the team (Pearce, Yoo & Alavi 2004). A group of authors have also explored the relationship between shared leadership in teams, team cognition and knowledge sharing and team learning. Scholars have established that transactive memory, which was described as the metaknowledge of who knows what in teams, is stronger in teams when leadership behaviours are shared between team members (Solansky 2008). Furthermore, results from research undertaken by Choi, Kim and Kang (2017), Huang (2013), Liu et al. (2014) and Wang et al. (2017) have discovered that shared leadership was also significantly and positively related to organising and planning, knowledge sharing, team psychological safety and team learning with team psychological safety partially mediating the relationship between shared leadership and team learning. Finally, Wu and Chen (2018) have introduced the concept of “PsyCap” to shared leadership research. This has extended the current empirical enquiry into the relationship between shared leadership and various proximal, team level affective processes. “PsyCap”, is an emerging topic of research within the area of positive psychology and organisational behaviour. It is regarded as a team phenomenon developed through the collective agency of four factors that include self-efficacy, optimism, hope and resilience (Youssef & Luthans 2007). Results of this study demonstrated that shared leadership was positively and significantly correlated with collective “PsyCap”. At the same time “PsyCap” was shown to play an important mediating role in the relationship between shared leadership and the more distal outcomes of organisational commitment and creativity.

2.14.3 Behavioural Approach—Shared Leadership Research Findings: Effectiveness and Performance Outcomes

Focusing on how sharing leadership behaviours have enabled better functioning relationships between people in teams is important. However, when used alone, it may omit associating the benefits of shared leadership practice with the reality that teams and organisations must compete and deliver products and services. Therefore, linking shared leadership practices with measures of effectiveness and performance has become an important priority for some scholars.

Shared leadership researchers have assessed team performance in a variety of different ways. For example, a number have used different groups of university students as their sample population. These groups were invariably set a variety of business simulation tasks. Their
performance was either assessed by external business coaches and instructors (Sivasubramaniam et al. 2002; Small & Rentsch 2010) or team performance scores were calculated by comparing measures of group consensus with individual scores on problem solving tasks (Balthazard et al. 2004). In other studies team outcomes included measures of perceived effectiveness as assessed by team members (Daspi et al. 2013; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004), managers and internal customers (Konu & Viitanen 2008; Pearce & Sims 2002). Alternatively, Carson, Tesluk and Marrone (2007) utilised the assessment of external end users to evaluate project results and rate the effectiveness of each team in terms of project delivery, presentation and helpfulness of recommendations. Finally, Ensley, Hmielski and Pearce (2006) considered the effect of shared leadership in top management teams on aspects of organisational level performance measures. They went beyond team effectiveness outcomes by demonstrating the effects of shared leadership on important organisational performance outcomes such as annual revenue growth and the rate at which employee numbers grew in firms.

Although researchers have utilised a diversity of performance measures, shared leadership practice in teams has regularly been demonstrated to be an important predictor of a range of performance variables for both student groups and management teams. Whether the effect of shared leadership within student teams was assessed by grades and project scores (Sivasubramaniam et al. 2002; Small & Rentsch 2010), project end users (Carson, Tesluk & Marrone 2007) or team members themselves (Drescher & Garbers 2016; Martin et al. 2013; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Taggar, Hackett & Saha 1999), research findings frequently indicated that shared leadership was an important predictor of performance variables. For example, Small and Rentsch (2010) and Sivasubramaniam et al. (2002) found the shared leadership dynamics in teams was positively and significantly related to a student team’s ability to effectively manage project resources and was a significant predictor of group performance. Furthermore, results presented by Carson, Tesluk and Marrone (2007) showed that shared leadership accounted for a significant variance in student team performance exceeding that accounted for by either control variables or specific antecedents. Research undertaken by Taggar, Hackett and Saha (1999) also stressed that high team member leadership emergence was required for high team performance and that without the emergence of leadership among team members the effects of the team leader’s leadership were negated. While this initial evidence provides a strong indication to suggest that shared leadership in teams can have a potentially powerful impact on team performance outcomes, some research results have found no significant relationships between shared leadership practice in student teams and either perceived effectiveness or task performance (Balthazard et
al. 2004; Pearce, Yoo & Alavi 2004). This relationship was reiterated by results of a meta-analysis conducted by D’Innocenzo, Mathieu and Kukenberger (2016). In an investigation of 50 effect sizes examining a total of 3,198 teams, the authors concluded that in research that used samples from class groups or laboratory settings, the effect sizes yielded by those studies were lower when compared to teams sampled from field settings.

A small but growing body of scholars has extended the research work that explored shared leadership within student teams. These authors have examined the empirical association between performance outcomes and shared leadership in different organisational settings. These independent studies have extended over different cultures (Chiu, Owens & Tesluk 2016; Fausing et al. 2013; Hoch, Pearce & Welzel 2010; Ishikawa 2012) and shown a relationship between shared leadership and team performance across a wide diversity of different types of teams and contexts. This diversity includes groups of employees within change (Pearce & Sims 2002) and top-management teams (Ensley, Hmielski & Pearce 2006), consulting (Hoch, Pearce & Welzel 2010), manufacturing (Fausing et al. 2013), research and development/R&D (Chiu, Owens & Tesluk 2016, Hoch & Kozlowski 2014; Ishikawa 2012), entrepreneurial (Zhou 2012), engineering (Wu & Cormican 2016), medical (Galli et al. 2017; Kunzle et al. 2010; Somboonpakorn 2011) social work (Pearce, Yoo & Alavi 2004), inter-organisational (Gu et al. 2016) and military combat teams (Ramthun 2013). The environments in which these teams have operated were described as challenging, complex, ambiguous, extreme and dangerous. Yet despite the wide diversity of contexts and types of teams most of these studies showed a positive relationship between shared leadership and team performance outcomes.

Kunzle et al. (2010), for example, discovered that high performing anaesthesia teams operating in very complex and critical environments frequently shared leadership practices. Resident doctors of high performing teams were more willing to share leadership functions with nurses and the sharing of leadership roles was particularly effective when non-routine events occurred. In addition, Galli et al. (2017), while examining the effectiveness of shared leadership in eight health care teams, found that shared leadership was positively related to customer satisfaction and project completion. The authors concluded that “in phases with a lot of change management, the team should implement shared leadership” (Galli et al. 2017 p. 38). Finally, Somboonpakorn (2011) examined a different component of the medical fraternity by exploring the dynamics of shared leadership practice and performance outcomes in 223 nursing teams working in 10 major hospitals in Bangkok. Findings demonstrated a direct effect between shared leadership practice and team performance outcomes with higher levels of shared leadership directly relating to team effectiveness.
Chiu, Owens and Tesluk (2016), Hoch and Kozlowski (2014) and Ishikawa (2012) established that shared leadership practice also positively influenced performance in Japanese and Taiwanese virtual research and development (R&D) teams. The process of research and development activities was described as highly ambiguous and uncertain and it was necessary for these teams to “increase the information processing ability of the team and promote the intrinsic motivation of team members by shared leadership within the team” (Ishikawa 2012, p. 278). A direct and positive association was also found by Hoch and Kozlowski (2014) between shared leadership, but not hierarchical leadership, and R&D team performance. Alternatively, Chiu, Owens & Tesluk (2016) reported that the positive effect of shared leadership on team performance in Taiwanese R&D teams was significantly stronger when teams comprised of highly competent members. Another field study, consisting of 26 German project teams, provided further support for the conceptual independence of shared leadership, its cultural transferability and its relationship with enhanced team performance (Hoch, Pearce & Welzel 2010). The authors discovered a three-way interaction between age diversity, team coordination and shared leadership. When age diversity and team coordination were low, Hoch, Pearce and Welzel (2010) obtained a stronger positive effect for shared leadership predicting team performance.

The relevance and impact of shared leadership across different settings was also exemplified by the results of research conducted by both Zhou (2012) and Ramthun (2013). The sample used by Zhou (2012) included 200 entrepreneurial teams working in a technology incubator located in Zhejiang province in China. Findings of this research highlighted that shared leadership improved entrepreneurial team performance. At the same time, shared leadership also played an important moderating role so that when team members could share leadership influence, the entrepreneurial teams benefited more from having greater skill diversity. Alternatively, when teams did not experience shared leadership dynamics, skill diversity harmed entrepreneurial team performance. While several scholars have hypothesised that shared leadership was more appropriate for certain types of knowledge work (Pearce 2004; Carson, Tesluk & Marrone 2007; Zhou 2014), Ramthun (2013) examined the impact of shared leadership in an entirely different context by investigating shared leadership dynamics in dangerous environments. In a field study of 51 combat teams, Ramthun (2013), established that military teams that relied on multiple individuals for leadership influence in dangerous combat scenarios, performed at higher levels than those functioning under a vertical leadership model. These results along with the findings outlined in the preceding paragraph suggest that shared leadership can have a powerful effect upon team performance in a variety of different cultural and environmental contexts.
Several other studies have also examined the relationship between vertical leadership that is provided by the formally appointed team leader and shared leadership. These studies have shown that both types of leadership are related to team outcomes, but shared leadership made a more unique and significant contribution. For example, three different sources (team members, managers and internal customers) were used by Pearce and Sims (2002) to analyse several fine-grained dimensions of team effectiveness. The most important finding of their research was that shared leadership dynamics within change management teams was an important predictor of team effectiveness. In addition, their research findings indicated that shared leadership was a more accurate mechanism than vertical leadership as a predictor of team effectiveness. Furthermore, the findings illustrated that a conscious strategy of distributing leadership to team members was likely to enhance team performance. The relative importance of shared leadership was also emphasised in an extensive two sample study of a total of 120 firms conducted by Ensley, Hmielski and Pearce (2006). Their results demonstrated that shared leadership within new venture top management teams accounted for up to 20 percent of the variance in new venture performance, beyond that which was accounted for by control variables. Results also demonstrated that shared leadership within skilled and diverse new venture top management teams was likely to produce superior outcomes beyond that which is accounted for by vertical leadership provided by the formal team leader.

These results build upon similar quantitative findings highlighted by Pearce and Sims (2002) and Pearce, Yoo and Alavi (2004). In the case of Pearce, Yoo and Alavi (2004) the authors found that no vertical leader behaviours were significantly related to any of the team outcome measures. Conclusions presented by Pearce and Sims (2002) support elements of these findings. These authors determined that while both vertical and shared leadership provided important sources of leadership, shared leadership was the most useful predictor of team effectiveness. Furthermore, as a follow up analysis they explored the fundamental differences in shared leadership dynamics of both low performing and high performing teams. They verified that high performing teams exhibited more leadership behaviours overall and had slightly greater levels of shared leadership. In contrast low performing teams demonstrated more vertical leadership than shared leadership.

Finally, two groups of researchers have extended the performance parameters from examining team level outcomes to intra and inter-organisational variables. Recent research undertaken by Mihalache et al. (2014) has established an association between the degree of shared leadership in top management team members and explicit organisational outcomes. Those outcomes focused on different aspects of innovative practice throughout firms, specifically the need to
maintain organisational ambidexterity to facilitate both exploratory and exploitative innovations. The authors observed that shared leadership in top management teams enhanced organisational ambidexterity through cooperative conflict management style and decision-making comprehensiveness. The level of performance criteria has been extended further by Gu et al. (2016) who have researched the impact of shared leadership practice across 68 inter-organisational teams across various industry categories in China. Their findings provided empirical support for hypothesis that shared leadership positively related to team creativity in inter-organisational groups.

Taken together this growing body of studies has clearly established a link between shared leadership and group performance. Furthermore, not only does this research indicate that shared leadership is an important predictor of effectiveness outcomes at a group level, it suggests that it is also a better predictor than vertical leadership.

2.14.4 Behavioural Approach-Shared Leadership Research Findings; Transformational and Empowering Behaviours in Teams

A few authors have further refined our understanding of the relationship between shared leadership behaviours and team outcomes by utilising dimensions of either the Bass’s Multifactor Leadership Questionnaire (MLQ) (Bass & Avolio 1995) or the Team Multi-Factor Leadership Questionnaire (TMLQ) (Alvolio et al. 2003). Derivatives of these two instruments include the Leader Behaviour Questionnaire (Pearce & Sims 2002), the Leadership Behaviour Survey (Ensley, Hmielski & Pearce 2006) or Hoch, Welzel & Pearce’s (2010) Shared Leadership Questionnaire (SLQ). These questionnaires explore varying components of transformational, transactional, empowering, directive or aversive/laissez-faire leadership behaviours. Overall this small cluster of research has not provided entirely conclusive findings. But what is apparent within the body of these results is that some forms of influence behaviour are more conducive to shared leadership in teams and that these specific behaviours generate better performance outcomes.

One of the broadest measures of shared leadership behaviours within teams was assessed by Small and Rentsch (2010). These authors examined the distribution of leadership behaviours by combining elements of the LBDQ and TMLQ. Task and relation-oriented items were based on content from the LBDQ and change-oriented items were sourced from the TMLQ. Findings of this research indicated that while shared leadership was positively and significantly related to objective team performance, this relationship became stronger over the later stages of team development and was therefore more prevalent in mature teams. Ensely, Hmielski and Pearce (2006) also developed a broad scope of behaviours to ascertain the level of leadership influence
in teams. Their *Leadership Behaviour Survey* included sub-dimensions that explored directive, transactional, transformational and empowering leadership. The authors examined both vertical (formal) and shared leadership (informal) within new-venture top management teams and concluded that shared leadership was a “particularly efficacious predictor of new venture performance” (Ensely, Hmielski & Pearce 2006, p.226).

A shortened version of Pearce and Sims’ (2002) extensive 70 item leader behaviour questionnaire was developed and refined by Hoch (2010) and applied in field research by Fausing et al. (2013), Fausing et al. (2015), Hoch, Pearce and Welzel (2010) and Hoch (2014). The instrument assessed a broad array of leadership behaviours as it contained six transformational, four transactional, three aversive and 11 empowering leadership items. Except for Fausing et al. (2013) each of these studies showed a positive relationship between shared leaderships and the outcomes of interest. In the case of Fausing et al. (2013) the relationship between shared leadership and team performance was not found to be significant when the team’s work was routine and straightforward.

Three studies have used the TMLQ instrument or selected items and established a positive relationship between group level outcomes and dimensions of shared leadership in teams. While some of the dimensions used in the instrument such as shared transactional and non-transactional or laissez-faire leadership have exhibited a negative effect on team level processes (Avolio et al. 1996; Sivasubramaniam et al. 2002), shared transformational behaviours were found to consistently demonstrate positive relationships with important group level attitudes, behaviours and cognitions. Shared transformational leadership also positively predict group cohesion (Avolio et al. 1996; Balthazard et al. 2004) and had significant and positive effects on group potency (Avolio et al. 1996; Sivasubramaniam et al. 2002). Similarly, research findings provided by Avolio et al. (1996) indicated that team transformational leadership ratings were also positively correlated with measures of group efficacy, trust, satisfaction and effectiveness.

A similar pattern of relationships was also evident in the results presented by both Pearce and Sims (2002) and Pearce, Yoo and Alavi (2004). Both studies used the *Leader Behaviour Questionnaire* to explore four types of leadership behaviours (directive, transactional, transformational and empowering) and the relationship with measures of team effectiveness. While the results for both directive and transactional shared leadership behaviours displayed inconsistent relationships with group level outcomes, both shared transformational and shared empowering leadership regularly demonstrated positive relationships with team outcome variables. This relationship was also illustrated by Pearce and Sims (2002) who found that
shared transformational leadership was positively associated with seven a priori variables of team effectiveness, as assessed by managers, internal customers and team members. Moreover, Pearce, Yoo and Alavi (2004) also linked shared transformational leadership to group performance outcomes. Their results emphasised a positive association between shared transformational leadership and both team potency and social integration. However, while shared transformational behaviours displayed positive effects with some team outcomes, shared empowering leadership was shown to be positively related to all four of the performance measures being studied (potency, social integration, problem solving quality, perceived effectiveness). Regarding shared empowering behaviours, Pearce and Sims (2002) also found a positive association with this dimension and performance measures, as a distributed empowering influence in teams was positively related to team members’ self-ratings of effectiveness. In addition, Wood (2005), who used only the empowering component of the leadership behaviour questionnaire, established that empowering behaviours between team members were positively related to the overall level of shared leadership activity with the team.

The important role played by both transformational and empowering leadership has been reiterated in the findings of a substantial meta-analysis conducted by Wang, Waldman and Zhang (2014). While their findings overall revealed a positive relationship between shared leadership and team effectiveness, they noted that what behaviours were shared between team members was of importance when regarding links to team effectiveness. Shared traditional forms of leadership, which were defined by the authors as including transactional or task-oriented leadership behaviours, displayed a weaker relationship with team effectiveness when compared to shared new-genre leadership (defined as transformational, inspirational and visionary). The authors surmised that new-genre leadership emphasised change and development and that the sharing of these leadership functions was especially relevant to the achievement of team outcomes. Conversely, it was not seen essential for multiple team members to be involved in more traditional and transactional leadership functions that maintained the status-quo (Wang, Waldman & Zhang 2014).

2.14.5 Behavioural Approach—Shared Leadership Research Findings: Is Shared Leadership Effective and Does It Produce Useful Outcomes for all Teams?

Together the independent studies outlined above suggest that shared leadership is a useful predictor of several outcome variables that include group behaviours, beliefs and cognitions along with performance outcomes at the individual, group and organisational level. A small subset of this research has also examined the relative impact of shared leadership and vertical leadership behaviours in teams. While this research does not suggest that shared leadership and vertical leadership in teams are mutually exclusive, what it does indicate is that contexts
and environments of shared leadership is an important ingredient in teams and can be a relatively useful predictor of team effectiveness than formal vertical leadership.

The positive association between shared leadership practice and team effectiveness and performance has been repeatedly supported by a series of meta-analysis. This body of work draws together several important conclusions having explored the relationship between shared leadership and team effectiveness (Wang, Waldman & Zhang 2014) and team performance outcomes (D’Innocenzo et al. 2014; Nicolaides et al. 2014) across a wide array of independent samples of research. Results from these three analyses consistently found a significant positive relationship between shared leadership and team performance and effectiveness. In addition, Wang, Waldman and Zhang (2014) and Nicolaides et al. (2014) showed that shared leadership accounted for greater variance in team performance beyond the vertical leadership of the team. However, these positive relationships were not ubiquitous across all cases. While shared leadership significantly related to team effectiveness, that relationship varied for different types of effectiveness criteria. For example, Wang, Waldman and Zhang (2014) found that shared leadership was more related to attitudinal and behavioural outcomes when compared to both subjective and objective performance measures.

It is also important to recognise that while many of the research findings validated the significant relationship between shared leadership and team outcomes, this positive result was not always produced across all dimensions. As already briefly mentioned, Fausing et al. (2013) in an analysis of 81 teams working in a Danish manufacturing company did not find a significant relationship between shared leadership and team performance. These results, the authors suggested, indicated that shared leadership may be detrimental to team performance in environments with “routine, familiar and predictable tasks that do not necessarily require knowledge and inputs from multiple individuals” (Fausing et al. 2013, p. 256). A lack of positive association between shared leadership and team performance in field research was also found by Bowers and Seashore (1966), Mehra et al. (2006) and Neubert (1999). Bowers and Seashore (1966) explored the independence of leadership influence from the traditional view of the leader’s position in the team. This was examined by investigating four task and relational oriented leadership behaviours, that were provided by team members for each other (peer to peer) or by the supervisor (formal leaders). Findings showed that across all four dimensions peer to peer leadership exhibited negative effects on team effectiveness. A similar association was found in an analysis of 21 manufacturing teams by Neubert (1999), who concluded that having a larger proportion of informal leaders in teams did not significantly relate to team performance. In addition, Mehra et al. (2006) used social network analysis to explore three
different implementations of leadership distribution within sales teams. Results indicated that shared/distributed leadership was not significantly related to superior performance using any of the three different operationalisations of network centralisation. The authors concluded that team performance was not simply a matter of increased leadership volume of activity or roles. Instead theories of distributed leadership activity needed to make more granular distinctions between different types of distributed leadership if they are to explain significant variance in measures of team performance.

The issue of specificity of leadership activity has been explored by Hiller, Day and Vance (2006). Their study highlighted leadership activity within winter road maintenance crews. These groups were described by the authors as traditional work teams who undertook activities like snow clearing and general road maintenance. Findings indicated that higher mean levels of collective relationship-oriented leadership activity in the team were more consistently related to team effectiveness, than the task-oriented leadership dimensions. The authors surmised that for team supervisors the sharing of relationship-oriented leadership is more important for team effectiveness than the sharing of task-behaviour sharing. These results echo elements of Fausing et al’s (2013) conclusion that routine, repetitive tasks do not benefit from shared leadership.

Other shared leadership research has examined specific characteristics of leadership behaviours in different student teams and found similar disassociation between shared leadership and team level outcomes. These studies conducted by Balthazard et al. (2004), Boies, Lvina and Martens (2010) and Gupta, Huang and Yayla (2011) have focused on shared transformational leadership within student groups and assessed these influence relationships using forms of the Multifactor Leadership Questionnaire (MLQ) (Avolio et al., 2003; Bass & Avolio 1994). Balthazard et al. (2004) selected eight statements from the short form of the MLQ to assess shared transformational leadership (STL) activity within the team. These items investigated charismatic and inspirational leadership in conjunction with intellectual stimulation. Contrary to expectations, shared transformational leadership was not significantly related to task performance in these teams. More recent research by Boies, Lvina and Martens (2010) and Gupta, Huang and Yayla (2011) has also tapped into exploring shared transformational leadership by accessing five subscales from the TMLQ. These subscales assessed inspirational motivation, intellectual stimulation, individualised consideration and idealised influence. The work undertaken by Gupta, Huang and Yayla (2011) revealed that collective transformational leadership in teams played an important mediating role in the relationship between social capital and team performance. Specifically, social capital positively influenced performance only
when collective transformational leadership was high. However, results also indicated collective transformational leadership in the student teams had no direct impact on team performance. Boies, Lvina and Martens (2010) hypothesised that teams which contained members who consistently displayed STL would experience greater trust, potency and team performance. However, while there was a positive relationship between STL, team level trust and team potency, results indicated that shared STL in fact had a negative effect on team performance.

It is noteworthy that Balthazard et al. (2004), Boies, Lvina and Martens (2010) and Gupta, Huang and Yayla (2011) all assessed the development and presence of transformational leadership in student groups undertaking challenges in the form of business simulation games or ethical problem solving. These were not actual work groups in organisations and the risk of poor performance was not as great as it might have been in a work setting (Balthazard et al. 2004). Some authors concluded that certain types of teams, in this case student autonomous work teams, may not benefit as much from shared transformational leadership qualities (Boies, Lvina & Martens 2010). This statement supports conclusions of a large meta-analysis of shared leadership research undertaken by D’Innocenzo, Mathieu and Kukenberger (2016). The authors found a lower average effect size when the sample studied was from a classroom or laboratory setting compared to field research.

The importance of type, context and conditions was also highlighted in the findings of work undertaken by Hoch (2014) and Hoch, Pearce and Welzel (2010). Both studies have provided evidence that shared leadership and team performance relationships are more complicated than a simple direct effects relationship. Regarding the earlier work conducted by Hoch, Pearce and Welzel (2010) shared leadership was more likely to correlate with team performance under high rather than low levels of team diversity. In contrast Hoch (2014) concluded that shared leadership was not related to team performance when both age diversity and team coordination were high.

It is important to acknowledge this small array of research findings, which have consistently demonstrated a non-significant main effect of shared leadership on team performance. This body of literature emphasises the complicated dynamics of shared leadership behaviours in different team contexts and it accentuates the need to further compare the effects of shared leadership in various types of teams and to ascertain when leadership is most appropriately shared. At the same time, these results also highlight the importance of investigating context and conditions, which facilitate shared leadership or moderate or mediate its relationship with team outcomes. Notwithstanding these apparent inconsistencies, on balance, scholars believe
that shared leadership is a unique, important and useful approach in a team context as it more frequently relates in a positive way with higher levels of team functioning and thereby team performance measures (Barnett & Weidenfeller 2016; D’Innocenzo, Mathieu & Kukenberger 2016).

2.14.6 Behavioural Approach-Shared Leadership Research Findings; What Conditions Influence Shared Leadership?

Several researchers have stressed the importance of identifying antecedents of shared leadership as an area meriting specific inquiry (e.g. Bligh, Pearce & Kohles 2006; Burke, Fiore & Salas 2003; Cox, Pearce & Perry 2003; Conger & Pearce, 2003; Fausig et al. 2015; Nicolaides et al. 2014; Perry, Pearce & Sims 1999; Seers, Keller & Wilkerson 2003). Consequently, a small but increasing number of scholars have led an investigation into the antecedents of shared leadership in teams. Their examination of these independent variables has included both situational and contextual features. These were probable to affect both the importance of shared leadership in the explanation of team effectiveness and the likelihood that shared leadership will emerge in teams.

One set of facilitating factors of interest has focused upon different aspects of the team’s internal environment. These variables expressed team members’ dispositions along with elements that reflected their willingness to influence and be influenced by others in the team. A wide variety of dispositional antecedents have been examined by different authors. These have included team members’ sense of collectivism (Small & Rentsch 2010), proactivity (Chiu, Owens & Tesluk 2016) and shared purpose (Carson, Tesluk & Marrone 2007; Daspit et al. 2013) and the prevalence of integrity (Hoch 2013), trust (Small & Rentsch 2010) and psychological empowerment (Grille, Schulte & Kauffeld 2015) in teams. Other authors have extended our understanding of the impact of different elements of team culture and shared leadership practice by exploring the associations between social support (Carson, Tesluk & Marrone 2007; Daspit et al. 2013) and the degree to which team members had input and voice concerning the future direction of the group and how the team fulfils its aims (Carson, Tesluk & Marrone 2007; Daspit et al. 2013). Other valuable precursors linked to the teams’ internal environment were also investigated by Grille, Schulte and Kauffeld (2015), Ullah and Park (2013) and Wood (2005). They provided insights into the impact of team members constructive beliefs about shared leadership practice, empowering team behaviours and the importance of team member perceptions about the fairness of rewards and appreciation.

Research results showed that all the specific factors outlined above acted as important antecedents that were both significantly and positively related to shared leadership in teams.
This data implied that teams with a supportive internal environment characterised by trust, empowering relationships and constructive interaction styles, the ongoing prioritisation of group goals, collective input and a common purpose, were more likely to develop high levels of shared leadership.

A diversity of scholars has endorsed the hypothesis that both shared leadership and the actions of vertical or formal leaders supplement the behaviours, actions and development of the other. This mutual dependence has been highlighted in the findings of some early research in this area. For example, Bowers and Seashore’s (1966) research conclusions emphasised that there was a significant and strong relationship between formal and peer leadership. If team leaders, for example, wanted peers within a team to increase their emphasis on team goals, then the vertical leader must increase their own interactions and emphasis around the collective goal. In this case the emergence of peer leadership cannot occur without the initiation of vertical leadership direction and practice. In a similar vein, Taggart, Rick and Sudhir (1999) concluded that teams perform best when both the team leader and team members were high in leadership. The leadership style or approach of formal team leaders has also been analysed by Chiu, Owens and Tesluk (2016), Fausing et al. (2015) and Hoch (2013). The results summarised by Chiu, Owens and Tesluk (2016) demonstrated the importance of formal team leaders modelling humility. Their findings suggested that leader humility facilitated the development of shared leadership in teams by encouraging the specific relational dynamics inherent in the formation of shared leadership. Both Fausing et al. (2015) and Hoch (2013) have specifically explored how vertical transformational and empowering leadership relate to the development of shared leadership. They hypothesised that the more these certain types of vertical leadership behaviours were present or in use, then the greater the likelihood that leadership in teams would eventually be shared. The findings illustrated the importance of specific formal team leader behaviours with both vertical empowering (Fausing et al. 2015; Hoch 2013) and vertical transformational leadership (Hoch 2013) significantly predicting shared leadership. However, Grille, Schulte and Kauffeld (2015) in their exploration of factors that might advance shared leadership observed that the formal team leader’s behaviours had differential effects on the emergence of shared leadership activity within teams. Team members’ attitudes and perceptions of the formal team leader appeared to have an impact on the likelihood of team members themselves engaging in leadership within their team. If the team leader’s behaviours were viewed by team members as prototypical of those in the team, then they themselves would engage in leadership within the team. Alternatively, vertical and shared leadership were found to have a negative association when team members perceived low team leader prototypicality.
Another factor that was observed to encourage the display of shared leadership in teams was the proximity between team members. Those teams that characteristically displayed greater face-to-face communication were found by Balthazard et al. (2004) to be more likely to develop leadership when compared to groups functioning as virtual teams. The importance on interactions and engagement between group members has also been researched by Fausing et al (2015) who explicitly addressed the significance of interdependence in relation to shared leadership in teams. Their findings demonstrated that interdependence predicted shared leadership activity with the authors confirming the importance of having interdependent tasks and goals to leverage the advantages of sharing leadership in teams.

Several other important internal team variables have also been highlighted by Avolio et al. (1996), Konu and Viitanen (2008) and Small and Rentsch (2010). The first of these enabling factors related to the stages of team development. Results obtained by Small and Rentsch (2010) demonstrated that the relationship between antecedent variables and the emergence of shared leadership in teams varied over time. The authors found that the influence of shared leadership relationships was more likely to be displayed in more mature teams and therefore shared leadership was less evident in the early phases of initiating a project. The importance of relation longevity was also emphasised by Avolio et al. (1996). Their longitudinal study compared relationships within teams over time with leadership and group process measures of collective efficacy. Results confirmed that influence relationships were more positive for shared transformational leadership at Time Two (six months) versus Time One (one month).

A further exploration of the impact of antecedents was undertaken by Konu and Viitanen (2008). Their investigation of the occurrence of shared leadership among middle level managers in the social and health care sector in Finland revealed that gender was distinctly related to the occurrence of shared leadership practice in teams. Female managers working in health centres or social service administration were found to be more likely to participate in shared leadership practices than male doctors in areas of specialised care. Shared leadership among female managers was emphasised as a process of joint action, involving the sharing of experiences and the creation of common meaning through discussion and negotiation. The importance of having more informal female leaders in teams has also been stressed by Neubert (1999) and Berdhal and Anderson (2005). These authors discovered that mixed gender groups with fewer men majority-female groups had less centralised leadership structures and, furthermore, having more women as informal leaders within teams was significantly related to team performance.
While there is a growing understanding of the variety and importance of structural and cultural context within teams, few researchers have examined any antecedents that were external to a team’s working processes, dynamics or architecture. There were only three exceptions to this generalisation: the first examined the potential effect of formal horizontal structures on the emergence of shared leadership practice (Wood 2005); the second explored the agency and impact of external coaches (Carson, Tesluk & Marrone 2007); and the final study investigated the impact of organisational culture on shared leadership activity (Erkutlu 2012). Interestingly, Wood (2005) found no relationship between flatter organisational structures and the emergence of shared leadership among team members. In contrast, results from Carson, Tesluk and Marrone’s (2007) research established that coaching provided by an external team leader enabled the emergence of shared leadership especially when existing conditions within the team meant that individuals were given little opportunity to contribute and there was little social support or a shared purpose. Additionally, Erkutlu (2012) found that organisational cultures moderated the positive relationships between shared leadership and proactive behaviours. The author hypothesised that supportive organisational cultures motivated team members to participate and contribute toward leading others to achieve common goals. Together these findings suggest that while the formal organisational structure of teams might be designed to promote shared leadership practice, it is the behaviours experienced within the team that influenced members willingness to be led and at other times affected their confidence to lead. Furthermore, the results also highlighted that given the right support and external resources, for example, coaches, shared leadership dynamics within teams can still emerge so that the behaviours experienced by people within the team lead them to feel as though they have a shared leadership responsibility and role.

Several authors have also advanced our understanding of the impact of shared leadership by exploring the indirect influence it may have on team outcomes. This indirect relationship is examined through the moderating and mediating effect of variables such as task interdependence and complexity and a variety of team characteristics.

One of the most frequently analysed moderators has been the characteristics of the different tasks undertaken by the teams. For example, Daspit, Ramachandran and D’Souza (2014), in an assessment of shared leadership behaviours among members of software development teams, determined that shared leadership in top management teams was more effective when tasks were critical and urgent. Other authors have explored the moderating impact of task complexity. In a study that explored the moderating role of teamwork conditions, Fausing et al. (2013) found that the non-significant main effect of shared leadership on team performance
was impacted by the type of work undertaken by the team. When teams were carrying out
tasks that were unfamiliar and varied shared leadership may benefit team outcomes.
Alternatively, when teams were met with familiar routine and predictable tasks shared
leadership did not benefit team outcomes. This moderator was also examined using 42
independent studies in a meta-analysis conducted by Wang, Waldman and Zhang (2014). The
results of their research also suggested a positive relationship between work complexity and the
effect size of shared leadership with team effectiveness. These findings supported theoretical
relationships outlined by Bligh, Pearce and Kohles 2006, Pearce (2004) and Pearce and Manz
(2005), who all suggested that as task complexity increased teams should look toward
leadership structures other than the traditional hierarchy or vertical leadership to aid in
successful task completion. However, more recent work undertaken by D’Innocenzo, Mathieu
and Kukenberger (2016) demonstrated a significantly divergent relationship. Their analysis of 43
shared leadership studies lead them to conclude that task complexity evidenced a significant
negative effect on the magnitude of the shared leadership-team performance relationship. This,
the authors suggested meant that teams undertaking tasks with higher levels of complexity
exhibited lower effects of shared leadership on team performance.

Task interdependence was another variable found to moderate the shared leadership to
performance relationship. In a meta-analysis of 51 studies Nicolaides et al. (2014) reported that
high levels of interdependence produced relatively strong correlations between shared
leadership and team performance. The results of other more recent independent studies also
reiterated the moderating effect of task interdependence. For example, Gu et al. 2016 found
that task interdependence amplified the linkage between shared leadership and knowledge
sharing. Conversely, in an independent study of teams working in the insurance industry in
South Korea, Ullah and Park (2013) did not find any significant moderating impact of task
interdependence affecting the relationship between shared leadership and team effectiveness.

The final collection of moderators has examined elements of team composition, structure or
culture. Chiu, Owens and Tesluk (2016), in analysis of 62 Taiwanese professional work teams,
determined that the interactive effect of shared leadership and team proficiency on team
performance was strengthened when teams were composed of highly capable members. The
characteristics of team member composition were also explored by Hoch, Pearce and Welzel
(2010) and Hoch (2014). They reported that demographic diversity moderated the impact of
shared leadership on team performance so that shared leadership was more strongly associated
with team performance in more diverse teams. The length team members were together was
also found to have a moderating impact so that the relationship between shared leadership and
team performance became weaker as the levels of team tenure increased (Nicolaides et al. 2014). In addition, Fausing et al. (2013) reported that when teams had greater autonomy and discretion over how they performed their work, the relationship between shared leadership and team performance was stronger. Hoch, Pearce and Welzel (2010) also emphasised the importance of coordination between team members, with results showing that greater coordination in the team had a positive moderating effect on team outcomes when shared leadership was low.

Some researchers also explored the impact of team size. While this has largely been incorporated as a control variable (Nicolaides et al. 2014) a restricted number of studies have examined team size from the perspective of a moderating influence. Scholars have viewed team size as either something that strengthens or alternatively weakens the possibility of shared leadership in teams. Solansky (2008) suggested that a greater number of team members may provide a wider variety of skills enabling a better facilitation of shared and distributed roles and responsibilities. Conversely, having a large team may reduce the possibility for group members to effectively coordinate their roles and communicate frequently, therefore hindering opportunities for mutual influence (Nicolaides et al. 2014). The moderating effect of team size on shared leadership has been inconclusive. For example, Konu and Viitanen (2008) showed that, besides gender, the group or unit size and the specific type of activity sector were also associated with shared leadership practices. Managers of small, specialised medical care units displayed fewer shared leadership practices compared with their counterparts who worked in larger health centres or social services administration. Similarly, results reported by Huang (2013) emphasised that the positive effect of shared leadership on team learning was enhanced when teams were larger. Alternatively, Hiller, Day and Vance (2006) found that team size was not significantly correlated with any collective leadership dimensions or any of the dependent measures. This result was later supported by Nicolaides et al. (2014) who, while undertaking a meta-analysis of shared leadership research, found that team size did not appear to moderate the shared leadership - team performance relationship.

While there was a diversity of moderators examined by researchers, few have looked at variables that mediate the impact of shared leadership. The two exceptions include work undertaken by Nicolaides et al. (2014) and Hoch (2014). In the case of the former, their meta-analysis revealed that shared leadership contributed to performance through the enactment of team confidence. This emergent state was highlighted as an important mechanism through which shared leadership fostered better team performance. In a similar vein, results from
research undertaken by Hoch (2014) suggested that information sharing between team members represents another mechanism through which shared leadership operated.

In conclusion, several researchers have considered the conditions facilitating the emergence of shared leadership in teams. Empirical research has demonstrated evidence that supports the influence of a small number of team level factors that have enabled shared leadership. Most of this research has examined factors that affect the team’s social architecture. These included aspects of their cultural milieu such as intragroup trust and the social and relational dynamics, such as social support and interaction styles, within teams. Some authors have also examined the potential influence of a team’s internal structure and composition, for example, gender, proximity and unit size, along with the influence of temporal dynamics in team work. Few authors have examined organisational and contextual factors that drive shared leadership processes in teams. The three exceptions include: an exploration of the impact of organisational structure (Wood 2005); culture (Erkutlu 2012); and the effect of external coaching (Carson, Tesluk & Marrone 2007) on shared leadership activity.

This group of recent studies has undoubtedly made strides in terms of advancing a more complete conceptualisation of the conditions that facilitate shared leadership in teams. However, there remains a clear opportunity for empirical work to establish a more complete understanding of the array of factors that facilitate shared leadership in teams and therefore allow teams to capitalise on the benefits associated with the outcomes of shared leadership.

2.14.7 Behavioural Approach-Shared Leadership Research Findings: Control Variables

To develop a more complete understanding of the antecedents of shared leadership and the benefits or outcomes, researchers have utilised a broad range of control variables to reduce the possibility of inaccurate or extraneous explanations and associations. Many of these factors have focused on controlling specific internal team characteristics such as the level of diversity within teams and the team’s structural and temporal characteristics. Factors that were controlled for team heterogeneity or homogeneity included gender and ethnicity (Carson, Tesluk & Marrone 2007; Robert & You 2013; Small & Rentsch 2010; Wood 2005). A review of the research literature indicated that there were only two internal team structures that were used as control variables. The first of these were labelled “work demands” and was used by Carson, Tesluk and Marrone (2007) to moderate the variance between different project demands with the authors assuming that more difficult projects would have a detrimental impact on shared leadership dynamics and team performance. The second factor was the effect of group size. Many authors included controls for this variable (Carson, Tesluk & Marrone 2007; Ensley, Hmielski &Pearce 2006; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Robert & You
Group size was thought to impact on the ability of a group to develop and sustain shared leadership. It was assumed that if a group was too large then the number of members in a group may create a “proximity barrier”. Alternatively, if a group were too small, workload requirements may preclude the emergence of shared leadership or teams may not contain enough people with the requisite skills to sustain shared leadership. While many authors included team size as a control variable, few described the relationships between team size and the emergence of shared leadership in teams. The only two exceptions were findings presented by Wood (2005) and Carson, Tesluk and Marrone (2007). The results presented by these two bodies of research were contradictory. In the first instance Wood (2015) stated that team size was negatively correlated with the extent of shared leadership. In contrast Carson, Tesluk and Marrone (2007) highlighted that team size was the only control variable with a significant positive relationship with shared leadership. The authors interpreted these results as suggesting that teams with more members have greater potential leadership resources available to them.

A small group of researchers also controlled for temporal characteristics within teams. This included team tenure (Robert & You 2013; Solansky 2008; Wood 2005) and job tenure (Wood 2005). No data was provided on the effect size of these factors. Finally, Ensley, Hmieliski and Pearce (2006) reframed the influence of structural and situational effects by controlling for two factors that were possibly distally associated with the immediate team environment. Their research included two control variables, firm age and firm size. Firm size was measured by using yearly revenue while age was simply defined as the number of years since the firm had been established.

While all the factors described above have been held constant to test for the relative impact of independent variables, it could be argued that some of these factors may play an important role in facilitating shared leadership in teams. Studying specific team characteristics, such as team size, life cycle and tenure as independent variables, may provide some deeper insights into the architecture and dynamics of teams that together facilitate the emergence of shared leadership.

2.14.8 Summary of the Qualitative and Quantitative Research examining the Dynamics of Shared Leadership in Teams

The purpose of this review of shared leadership enquiry was to advance an understanding of the various ways in which researchers have developed and investigated an alternative view of plural leadership processes. The moderate number of studies outlined in Appendix D, and discussed above, lend substantial empirical support to several research paradigms emphasised
in the conceptual frameworks developed by Bligh, Pearce and Kohles (2006), Cox, Pearce and Perry (2003) Friedrich et al. (2009), Muethel and Hoegl (2010), Pearce, Perry and Sims (1999), Pearce and Sims (1999) and Zhu et al. (2016). The research foundations, which are summarised in Appendix C emphasise the importance of several contextual factors, antecedents, mediating mechanisms, outcomes and boundary conditions, which conceptually depict extant research and theoretical understandings. While these constructs provide a valuable research platform, they also assist in improving the collective understanding about the operationalisation of shared leadership practice and our common understanding of the characteristics and theoretical framework for shared leadership research.

Qualitative research around shared leadership has provided information that is both context rich and context dependent. The use of qualitative methods has shed light on the complexities and multifarious nature of shared leadership practices. This includes a divergent understanding about how shared leadership is expressed in teams and the different roles undertaken by vertical leaders (Al-Ani, Horspool & Bligh 2011; Barnett & McCormick 2012; Klein et al. 2006; Steinheider & Wuestewald 2008; Wallace 2001). At the same time researchers have provided greater comprehension of the various antecedents and conditions that support the evolution and maintenance of shared leadership practices. Their work has emphasised a variety of influences that included factors like the effect of complex and competitive environments (Hooker & Csikszentmihalyi 2003) and the need for team members to have established trusting work relationships (Park & Zhu 2017), developed shared mental models (Barnett & McCormick 2012; Klein et al. 2006) and open communication (Park & Zhu 2017). At the same time, shared leadership practices have also been found to reinforce positive milieus within teams; these have been expressed as both individual and team level affective states that include interpersonal trust (Barnett & McCormick 2012; Bergman et al. 2012; Hooker & Csikszentmihalyi 2003; Shamir & Lapidot 2003), learning (Hooker & Csikszentmihalyi 2003), innovation (Park & Zhu 2017), collective efficacy (Barnett & Csikszentmihalyyi 2003), learning (Hooker & Csikszentmihalyi 2003), innovation (Park & Zhu 2017), and intrinsic motivation (Barnett & McCormick 2012). A small body of researchers have also illustrated an association between shared leadership dynamics and a diversity of effectiveness and performance outcomes that included proactive and discretionary police activity, increased levels of citizen satisfaction (Steinheider & Wuestewald’s (2008) and effective patient care (Klein et al. 2006). These qualitative research findings are important for scholarship in shared leadership research because they provide thick detailed data that expresses the contextual factors and capture the subjective experiences of leadership in teams. However, the quantity and diversity of qualitative research trails well behind the array of empirical investigations that examined shared leadership in teams using a quantitative lens.
Within the area of quantitative research, the conceptualisation, methods of analysis and assessment of shared leadership practices has varied between scholars. Specifically, most authors have focused on either evaluating each individual team members self-assessment of their leadership practices, “I have a clear vision of our team’s purpose” (Pearce & Ensley 2004, p.266), the appraisal of each of their peers in the team, “To what degree does your team rely on this individual for leadership?” (Carson, Tesluk & Marrone 2007, p.1225) or judgement of each team members’ perceptions of leadership of the whole team, “Members of my team envision exciting new possibilities” (Sivasubramaniam et al. 2002, p.79). At the same time those items that have been used to assess leadership practices have varied in specificity. These range from items that rely only on each respondent’s individual implicit beliefs and prototypes of leadership (Carson, Tesluk & Marrone 2007; Liu et al. 2014; Mehra et al. 2006) to assessments of the specific leadership behaviours, such as transactional, empowering or transformational, for every individual in the team. Finally, while most researchers have aggregated either the individual measures or “team-as-a-whole” (Wang, Waldman & Zhang 2014, p.185) data to generate a group mean, a small but growing number of researchers have measured shared leadership using a social network approach. These scholars have garnered a greater understanding of the structure (distribution or decentralisation) and number (density) of shared leadership ties within teams using social network analysis (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014).

While there is a lack of consensus regarding the best way to quantitatively measure shared leadership in teams (Wang, Waldman & Zhang 2014), there are several researchers who believe that the use of social network measures has demonstrated significantly higher correlations with performance measures (D’Innocenzo, Mathieu & Kukenberger 2016) and at that these measures provide higher validities (Nicolaides et al. 2014) when compared to aggregated approaches.

The team level unit of analysis favoured in much of shared leadership research has built upon a foundation of knowledge developed in the areas of team leadership (Kozlowski et al. 1996; Zaccaro, Rittman & Marks 2001) and team dynamics and team effectiveness (Mathieu et al. 2008) literature. This stream of plural leadership inquiry has taken a strong functionalist approach with one of the primary objectives being a better understanding of how shared leadership in teams impacts performance. The body of research outlined in this chapter has shown a strong positive relationship between shared leadership and a variety of performance measures. In addition, evidence presented in three recent meta-analyses has provided further support for the contention that shared leadership is correlated with team performance and
effectiveness measures (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014; Wang, Waldman & Zhang 2014). However, this relationship has not always been proximal, rather shared leadership has been found to have stronger associations with behavioural processes and emergent states when compared with both subjective and objective team performance outcomes. This behavioural focus has shown that shared leadership contributes to team performance through the enactment of collective efficacy, cohesion, potency, affective tone, social integration, trust, team psychological safety and team learning (Avolio et al. 1996; Balthazard et al. 2004; Drescher et al. 2014; Hmieleski, Cole & Baron 2012; Huang 2013; Liu et al. 2014; Sivasubramaniam et al. 2002; Nicolaides et al. 2014; Pearce, Yoo & Alavi 2004; Solansky 2008; Wang et al. 2017; Zhu et al. 2016). Therefore, shared leadership, as an emergent aspect of team processes, can also be an input to other behavioural and attitudinal processes or emergent properties of teams. The distinctive contribution of this research stream lies in its developing understanding of the psychological and team-based mechanisms that explain how shared leadership is related to team performance.

However, shared leadership did not always produce positive team results (Balthazard et al. 2004; Bowers & Seashore 1966; Fausing et al. 2013; Gupta, Huang & Yayla 2011; Mehra et al. 2006; Neubert 1999) and, in some cases, had been found to have a negative impact on team performance (Boies, Lvina & Martens 2010). In addition, researchers have also found that the relationship between shared leadership and team processes, effects and emergent states was stronger when certain individual, team and organisational contexts prevail. For example, shared leadership was impacted by individual affective states (Chiu, Owens & Tesluk 2016) and team cultural characteristics such as trust, collectivism, social support and levels of constructive interaction (Carson, Tesluk & Marrone 2007; Daspit et al. 2013; Hillier, Day & Vance 2006; Small & Rentsch 2010). At the same time, team environments characterised by high levels of interdependence and complexity (Balthazard et al. 2004; D’Innocenzo, Mathieu & Kkenberger 2016; Fausing et al. 2015; Hiller, Day & Vance 2006; Wang, Waldman & Zhang 2014) and team characteristics such as size, tenure, along with a team’s phase of development and structure (Carte, Chidambaram & Becker 2006; Hiller, Day & Vance 2006; Nicolaides et al. 2014; Wang, Waldman & Zhang 2014; Yang and Shao 1996) have all been shown to influence the extent leadership is shared between team members. Alternatively, the sharing of more traditional leadership functions in teams has demonstrated less impact on team effectiveness than those leadership behaviours that were oriented toward change, development (Fausing et al. 2013; Wang, Waldman & Zhang 2014) or relationship-oriented roles (Hiller, Day & Vance 2006). In conjunction with these findings other scholars have explored the role of vertical or formal leaders and more distal factors such as organisational culture and structure (Barnett &
McCormick 2012; Erkutlu 2012; Hooker & Csikszentmihalyi 2003; Shamir & Lapidot 2003; Wallace 2001; Wood 2005). These investigations and discoveries are important, as they have provided developing insights into the circumstances under which shared leadership might provide the most utility within teams and organisations.

There are also several key implications of these findings. The first is that shared leadership can be highly beneficial for the functioning and performance of teams and it can be considered a valuable strategy to improve effectiveness in teams in certain contexts. In general, this includes supportive team environments that are challenging and changing and in which there are interdependent patterns of individual and collective activity. Within this milieu shared leadership in teams emerges and contributes to the interconnectedness and synergy of collective knowledge, skills, abilities and relational dynamics.

The second implication is that the form of shared leadership style or behaviours matters. Several scholars have captured the distributed influence of a variety of leadership types and have specifically addressed the issue of exactly “what is being shared in shared leadership” (Zhu et al. 2016 p.5). While many of these different forms of leadership have been associated to some degree with shared leadership, the magnitude of those relationships has been shown to vary. These findings have allowed scholars to refine our understandings of which leadership prototypes are more effective in teams. This research indicates that while different types of shared leadership behaviours are not mutually exclusive, results highlight the significant positive effect of the “new-genre” forms (Wang, Waldman & Zhang 2014) which include both shared transformational and shared empowering influence behaviours (Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Wood 2005). These findings are noteworthy as they suggest that both transformational and empowering leadership can occur as shared influence behaviours in teams. Furthermore, both have been shown to facilitate team processes and have a significant and positive impact on team performance (Avolio et al. 1996; Hoch, Pearce & Welzel 2010; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Sivasubramaniam et al. 2002). Despite the critique provided by some researchers (D’Innocenzo, Mathieu & Kukenberger 2016) it is argued that a transformational and empowering leadership are multilevel constructs (Bass & Avolio 1995; Avolio et al. 2003) and that teams can display a shared transformational leadership style (Burns 1978). In addition, the use of a comprehensively researched, multifactor instrument with known psychometric qualities and a well-defined set of leadership behaviours is viewed as a more effective means to measure what is being shared in teams.
A distinctive contribution of much of this research stream lies in its understanding that shared leadership is inherently a relational and social phenomenon. The increased attention to shared leadership is rooted in the proposition that such a phenomenon contributes to team functioning and effectiveness, partly due to greater participation, information sharing, and positive affective and motivational processes among team members. However, shared leadership is also a complex and evolving theoretical concept and while some important questions have been answered by the research outlined in this chapter, there are still conflicting, unresolved and unexamined relationships and issues (Burke et al. 2006; Nicolaides et al. 2014).

2.14.9 Summary of Plural Leadership Research

This discussion reviewed the depth and breadth of empirical research specific to two forms of plural leadership practice in teams. The investigation also examined various research paradigms specific to both distributed and shared leadership scholarship (Figure 2-5). This body of material emphasises a diversity of important parameters and foundations that have helped to frame constructs that at times appear divested of any unitary structure. In addition, this review has provided an important summary of the diverse methodologies applied to studying plural leadership in teams.

The variety of different heuristic frameworks (Appendix C) developed by scholars have regularly examined plural leadership by combining the existing literature on individual leader behaviours and functions with input-process-output models from research on teams. A summary of the component parts of these conceptual models is provided in Figure 2-5. This summary describes four groups of antecedent variables (individual, team, task and organisational and contextual) all which scholars surmise influence the emergence of shared leadership practice. Researchers have also introduced a diversity of potential moderators and mediators that may affect the relationship between shared leadership practices and team or organisational level outcomes and performance measures. These outcomes and performance measures include team functions, affective states and specific team and organisational level performance criteria. Team level characteristics, processes and affective states are included as criteria across all elements of the input-process-output framework and as such were repeatedly put forward by researchers as suggested future directions for further research. Finally, scholars have generally viewed plural leadership as an emergent state or mediating causal variable located between the different categories of antecedents and varying group and performance outcomes. Several authors have attempted to frame plural leadership practice by either developing an array of taxonomies to classify different functions and behaviours or by transferring existing models of
leader behaviour into collective conceptual models. The systems of classification differentiate levels of planning, alignment, interdependence, concertive action and density and centralisation of leadership. Other researchers have explored the nature of plural leadership by using specific behaviours outlined in transactional and transformational theory to describe shared relational ties. These have been discussed within the context of both aggregate and social network activity within teams. In all cases, authors proposed that plural leadership, as conceptualised by any of the behaviours or functions outlined above, will be positively related to valued affective, cognitive, behavioural and performance outcomes.

These various models and taxonomies have all been developed with the intention of providing explanatory heuristics and suggested directions for future research. Some of these themes and conceptual foundations have been developed in the diverse body of empirical work described in this chapter and outlined in Appendix C. While at first glance this body of work may appear disparate, it does coalesce along several continuum and themes. These themes are outlined below.

Firstly, scholars have applied various optics to explain the modality of plural leadership within teams. These extend from the formal designation of leadership roles to various forms of rotation, distribution and emergence of leadership behaviours and functions. These different forms are often predicated on the number of people involved in the sharing of leadership and the pattern of distribution of sharing. Examples include the concertive work relationships and roles within small leadership structures in schools (Gronn & Hamilton 2004) and trauma resuscitation units (Klein et al. 2006). In these instances, leadership was vested in formal positions sometimes comprising of only two or three people, but plural leadership existed because multiple individuals were described as leaders. Here both vertical/formal and shared leadership act as sources of team leadership (Zhu et al. 2018). In a number of these cases plural leadership is planned and “coalitional, involving alliances between individuals to jointly exert influence over others” (Denis, Langley & Sergi 2012, p. 269) outside the group who are viewed as followers. At the other end of the continuum plural leadership is seen as an informal emergent team phenomenon (Avolio, Walumbwa & Weber 2009; Carson, Tesluk & Marrone 2007; Pearce, Manz & Sims 2008). This spontaneous emergence can occur as functions and behaviours are enacted by different members in a team, rotated from one person to another over time or co-performed so that multiple leaders simultaneously undertake different roles. Therefore, plural leadership may emerge through the distribution (independent enactment or rotation) or “sharedness” (simultaneous enactment) of functions and behaviours (Mendez
But plural leadership in teams does not necessarily mean that every team member will demonstrate leadership functions or behaviours at a given moment.

The second amalgamating theme has focused on what functions or behaviours are being shared or distributed in plural leadership. A body of work found in both the distributed and shared leadership streams explored plural leadership activity using indefinite or generic concepts to determine leadership practice. For example, Bush and Grover (2012), Inglis and Sarros (2003) and Lindgren and Packendorf (2011) while highlighting evidence of concertive action in groups, did not qualify what behaviours or functions were being distributed. This lack of specificity was also evident in the shared leadership domain with authors such as Neubert (1999), Ramthun (2013) and Taggart, Hackett and Saha (1988) relying on each respondent’s individual implicit beliefs and personal understandings of leadership practice. Alternatively, other scholars have provided precise and extensive criteria to determine plural leadership practice. For instance, qualitative research by Barry (1991), Brown and Giao (2002) and Rydenfalt et al. (2015) all employed pre-defined criteria to evaluate distributed leadership roles and behaviours. This degree of specificity was also evident in empirical work around shared leadership. Qualitative investigations undertaken by Barnett and McCormack (2012) explored shared leadership practice by evaluating specific leadership functions such as direction setting and facilitating learning. At the same time quantitative researchers (Carte, Chidambaram & Becker 2006) have explicitly measured shared leadership activity by applying typologies that include roles such as coordinators, monitors and mentors. Finally, a small but growing number of researchers have combined specific leadership behaviours, traditionally used to evaluate formal or vertical leaders, with shared and team leadership scholarship. This has generated several studies which explore shared transformational, transactional, directive and empowering leadership (Avolio et al. 1996; Balthazard et al. 2004; Boies, Lvina & Martens 2010; Ensley, Hmielski & Pearce 2006; Fausing et al. 2015; Hoch, Pearce & Welzel 2010; Ishikawa 2012; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Sivasubramaniam et al. 2002; Small & Rentsch 2010; Wood 2005).

The approach researchers have taken to determine what is being shared or distributed is strongly related to the levels of analysis and methodology that have been applied to evaluate plural leadership practice. This aspect forms a third theme within the scholarship in this area and it appears to have been divided into three distinct streams. The first group of researchers utilised qualitative research methods, the second an aggregation or “referent-shift approach” (D’Innocenzo, Mathieu & Kukenberger 2014) and the third adopted social network analysis to operationalise plural leadership dynamics. While both the descriptive and normative qualitative enquiries form a significant body of work, most empirical studies, particularly in shared
leadership, are predominately quantitative. One of these quantitative methods, the aggregation approach, has been used by authors to focus on both lateral behavioural influence among peers (Gupta, Huang & Yayla 2011) and the distribution of functions traditionally conducted by formal team leaders (Carte, Chidambaram & Becker 2006; Hillier, Day & Vance 2006; Yang & Shao 1996). This methodology, which aggregates team member ratings to a team level, assumes a convergent perception of how much leadership team members display (Zhu et al. 2016). In contrast, the third and final group of researchers did not assume the convergence of individual attitudes but rather had operationalised plural leadership by providing details regarding the structure (density and decentralisation) of leadership within teams. The social network approaches have assessed the plural leadership structures in several different ways. Some authors have examined the density (amount) and decentralisation (distribution) of leadership by evaluating which team members rely on different individuals within each group for leadership. These methodologies have generated social network data through the collection of information from team members based either on the participants own implicit beliefs about what constitutes leadership functions and behaviours (Ishikawa 2012; Mehra et al. 2006; Wang et al. 2017) or explicit leadership taxonomies (Chiu, Owens & Tesluk 2016; Mendez & Busenbark 2013; Small & Rentsch 2010). Measuring and understanding the relational dynamics and patterns in a team using social network analysis has shown promising insights about team functioning and performance (Barnett & Weidenfeller 2016; D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014).

This review has utilised a team effectiveness framework developed by Mathieu et al. (2008) to research the interaction between various inputs, moderators, mediators and outcomes in extant research. A summary of these findings is illustrated in Figure 2-6: An integrated framework of plural leadership practice in teams in Figure 2-6. In general, this analysis has emphasised the building evidence that plural leadership significantly and positively effects group behaviours, attitudes, cognitions and performance in teams (Barry 1991, Conger & Pearce 2003; Mehra et al. 2006; Nicolaides et al. 2014; Wang, Waldman & Zhang 2014). In particular, shared leadership has been shown to contribute to more distal performance measures through the enactment of behaviours, attitudes and cognitions within teams. Moreover, it has been established that shared leadership is more strongly associated with attitudinal and behavioural processes in teams when compared to both subjective and objective performance outcomes (Wang, Waldman & Zhang 2014). It was also made apparent throughout this review that scholars had examined the processes involved in plural leadership slightly differently and these different optics had given rise to the diversity of operationalisations of plural leadership practice illustrated in Figure 2-6. Concurrently, the same body of scholars had
developed an understanding of those factors that have facilitated the display of plural leadership. These variables, which encourage its display or expression within teams, are also summarised in Figure 2-6. These moderators or mediators include various affective processes, task and team characteristics and organisational variables. In a similar vein, there were also several studies that explored numerous antecedent variables that triggered the planned or spontaneous emergence of plural leadership activity. These included team level characteristics, individual factors, vertical or formal leader behaviours and organisational factors.

In general, a supportive environment characterised by challenging and complex tasks that required interdependence, learning and commitment, affected and were influenced by plural leadership dynamics. The themes outlined in this review also affirm that plural leadership is inherently a relational phenomenon with certain “new-genre” leadership styles and functional behaviours lending themselves better to shared leadership than others (Nicolaides et al. 2014; Wang, Waldman & Zhang 2014). In addition, a network-based approach to conceptualising, collecting and analysing plural leadership relations in teams has provided promise for future investigation (D’Innocenzo, Mathieu & Kukenberger 2014). Together the findings outlined in this review have provided a sound foundation and clear direction for the development of six research hypothesis outlined in the subsequent chapter.
Figure 2-5: Summary of heuristic frameworks that illustrate plural leadership practices in teams
Figure 2-6: An integrated framework of plural leadership practice in teams

**Antecedents**

**Individual Characteristics**
- Gender, grade point average, work experience, age
- Self—leadership, educational attainment, ethnicity
- Team member integrity

**Team Leader Characteristics**
- Communication, managers leadership, leader humility
- Vertical empowering and transformational leadership
- Gatekeeper, instructional leadership
- Length of time as leader, gender, cultural values
- Emergent leadership of the team leader

**Team Processes and Characteristics**
- Trust, face to face interaction, demographics, equality
- Shared purpose, efficacy, social support, reward, voice, team pro-activity
- Team size, structure, gender and race diversity
- Degree of commonality, interdependence, fair reward, empowerment
- Social capital, collaborative, collectivism, power distance, average tenure
- Stages of team development, membership structure, homogeneity and stability of the group

**Task characteristics**
- Urgency, interconnectivity
- Project demands

**Organisational Factors**
- Patient care, financial visibility, coaching
- Age of firm, revenue, team size
- Competitive external environment
- Managerial structure

**Plural Leadership**
- Shared transformational leadership
- Shared authentic leadership
- Distributed fragmented, coordinated leadership
- Informal leadership
- Management by exception and Laissez-faire

**Operationalisation of Plural Leadership Practice**
- Shared/collective transformational, transactional, directive, empowering and aversive leadership
- Direction setting, management, leadership capacity
- Leadership decentralisation and density
- Shared visionary leadership
- Boundary spanning
- Peer Leadership
- Transactional, directive, empowering, aversive
- Collective leadership; planning, problem solving, support, mentoring
- Creating autonomy, facilitating learning and engagement
- Shared communication, power and participative decision making
- Distributed fragmented or coordinated
- Network centrality, network relationships, network activities

**Moderator /Mediator**

**Team and Affective Processes**
- Team mental models, Team psychological safety
- Cognitive, motivational, affective and coordination processes, knowledge sharing
- Team commitment
- Behaviours, directive or empowering
- Efficacy, potency, cohesion, trust, confidence, communication
- Interaction styles, absorptive capacity, affective tone, group potency

**Team Characteristics**
- Aged diversity, team tenure
- Team size, team structure
- Gender diversity, team heterogeneity, skills and proficiency of team members, team type, combat experience, combat environment
- Shared values and collective identity, balance of power
- Managers professional background
- Skills of team members, complementarity of expertise

**Task Characteristics**
- Complexity, levels of autonomy, work function, task load
- Information sharing, coordination, job variety, task complexity
- Task interdependence, role ambiguity, role conflict

**Organisational Factors**
- Culture, innovation, support
- Organisational tenure, culture and diversity
- Shared values and collective identity, balance of power
- Creativity, ideas and expertise
- Structures that support participative decision making

**Outcomes**

**Proximal**
- Attitudes
  - Group affective state, satisfaction (job, individual, leader), affective motivation, extra effort, Commitment, Lower job stress
- Behaviours
  - Team learning and individual learning, team proactivity, reduced intra-group conflict, innovative behaviour, consensus building
- Cognitions
  - Team potency, team synergy, team cognition and motivation, flow, team safety, team cohesion, team trust, collective efficacy, shared mental models, transactional memory,

**Outcomes**

**Distal**

**Team Effectiveness**
- Coordination processes, communication, task performance, team/group performance, team goals achievement, team sales and satisfaction, enhanced team process and cognitions, Shared leadership, supervisory effectiveness, Organisational Performance
- Better patient and organisational outcomes, employee and revenue growth, general satisfaction, customer satisfaction, organisational citizenship behaviour, firm performance, sustained company performance, student achievement

**Other Factors**
- Measurement used to assess Shared Leadership
3 Theoretical and conceptual frameworks and a research

3.1 Introduction
The purpose of this chapter is threefold. Firstly, this enquiry links the emerging fields of plural leadership with two theoretical foundations, in the form of social exchange theory and social capital theory. The former explores the quality of relational interactions and the latter focuses on the nature, structure and resources embedded within networks of relational ties. This theoretical foundation is further populated by a conceptual framework that addresses the interface between leadership and team processes by incorporating the foundations of team, relational, distributed and shared leadership research. Finally, having established a conceptual and theoretical foundation, the definitive aim is to develop a research model that describes plural leadership as a contributor of important team processes and outcomes.

3.2 Theoretical Framework
3.2.1 Social Exchange and Social Capital Theory
Two complementary theoretical frameworks inform our understanding of the concepts and foundations of plural leadership within teams. The first of these is social exchange theory which provides clear implications for how group members can facilitate reciprocal influence. Social exchange theory has already been widely utilised to enhance the understanding of leadership and social interaction in groups and organisations (Cropanzano 2013; Seibert, Sparrowe & Liden, 2003). Blau (1964) defined social exchanges as “voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others” (p. 91). Social exchange theory involves a balance between individual anticipations regarding the outcomes of an action as well as the perceived subjective value or rewards of those outcomes. If the personal benefits of the outcome are more rewarding than the costs of engaging in the activity or exchange, then the relationship will hold greater value.

One of the basics tenets of social exchange theory is that participants must abide by certain rules of exchange. These form a “normative definition of the situation that forms among or is adopted by the participants in an exchange relation” (Emerson, 1976, p. 351). The use of social exchange theory in organisational research is framed around the basis of these exchange principles. Reciprocity or “repayment in kind is probably the best-known exchange rule” (Cropanzano & Mitchell 2005, p. 875); in general, “reciprocity is the tendency of people to respond to a beneficial action by returning a benefit” (Cropanzano 2013, p. 723). Reciprocity has been conceptualised by Ekeh (1974) in two different forms; the first is referred to as
restricted exchange and involves a dyadic interchange with direct mutual reciprocal outcomes that benefit each participant. Alternatively, generalised exchange is seen as both indirect and multilateral and occurs when individual contributions are spread over time. Social exchange theory has advanced the view that all interpersonal dynamics, including influence, emerge from patterns of exchange between individuals. The norm of reciprocity “plays a central role in the social influence process” (Chun, Cho & Sosik 2016, p. 377) and because individuals return the benefits they received, they are more likely to be influenced by and, in turn, influence others with whom they have strong social exchange relationships. In other words, “the ability to exert interpersonal influence is given to those who influence, by those who are influenced by them” (Seers, Keller & Wilkerson 2003, p. 83). Furthermore, the greater the exchange between individuals in a group the more those relationships are characterised by increased reciprocal influence (Homan 1958).

Like social exchange theory, social capital theory focuses attention away from individualistic explanations of leadership and highlights the notion that leadership resides in relational ties connecting individuals. Seminal and foundational literature in this area include articles by Bourdieu (1986), Coleman (1988), Putnam (1993) and Lin (2001). Scholars have conceptualised social capital as a set of social resources embedded in relationships (Burt 1992; Lin 1999). Social capital literature and scholarship are characterised by considerable diversity and a variety of definitions. Authors emphasise that this lack of cohesion “is not due to lack of understanding” (Bhandari & Yasunobu 2009, p.490), but the result of the various dimensions, forms and functions associated with the concept. However, there is a shared belief that social capital is embedded in relationships between individuals and that the intangible, but substantive outcomes rooted in those relationships are valuable, productive and beneficial resources for individuals and the group. Social capital theory, therefore, suggests that interpersonal relationships create value for individuals as they provide resources which can be used to achieve desired outcomes (Bizzi 2015).

Scholars have provided divergent views regarding the measurement and analysis of social capital. At an individual level, resources provided by social capital represent the explanatory mechanisms that associate interpersonal relationships to individual outcomes. Alternatively, at a collective level, social capital refers to “the quality of networks and relationships that enable individuals to cooperate and act collectively” (Bhandari & Yasunobu 2009, p. 501). Consequently, social capital is not possessed by individuals. Instead, it resides between actors and represents some aggregation of valued resources that are collectively produced and jointly owned by the parties interacting within the network of relationships (Bhandari & Yasunobu 2009; Burbaugh 2005).
In addition to the specifications of different levels of analysis, authors have emphasised a variety of different dimensions associated with social capital. In organisational studies, there are three forms of social capital created by and embedded in interpersonal relationships (Read & Laschinger 2015). These facets of social capital include structural, relational and cognitive elements (Manning 2017; Motkuri 2018; Read & Laschinger 2015). The cognitive dimension refers to aspects that facilitate the exchange of information and resources between individuals. These are centred around communication for shared meaning, representation and interpretation between individuals. Structural social capital refers to the overall pattern of connections between individuals, while relational social capital describes the “nature or quality of those relationships” (Read & Laschinger 2015, p. 1614).

Various authors have extended our understanding of social capital by emphasising the different qualities associated with relational ties (Coleman 1988). These include outcomes of reciprocity, trust, shared norms, effective information channels and collective social networks. Expression of these qualities provide opportunities for individuals and groups to access resources through social ties. The expression of these qualities may lead to increased quantity, accessibility, and mutuality in groups and support the development of mutual trust and an expectation of reciprocity among group members (Burbaugh 2005). Networks of relationships provide members with collectively owned capital and, therefore, social networks form an important source of social capital. Social networks are not viewed as exogenous to social capital but rather “social capital comprises both the network and the assets that may be mobilized through the network” (Nahapiet & Ghoshal 1998, p. 243). In organisational scholarship, social networks have taken two forms. While vertical networks operate through formal hierarchical arrangements, horizontal social capital refers to lateral ties between people of similar status and power (Bhandari & Yasunobu 2009). Horizontal social capital can be found at a team level in organisations and potentially encompasses several aspects of team functionality expressed through the structural, cognitive and relational dimensions of social capital. These three aspects of social capital “positively facilitate superior team performance” (Gupta, Huang & Yayla 2011, p. 33) by enabling team members to engage in a “high quality exchange of information and resources to generate better solutions for the tasks confronting teams” (Gupta, Huang & Yayla 2011, p. 33).

3.3 **Social Exchange Theory, Social Capital Theory and Plural Leadership**

The work of social exchange theory in sociology has clear links to social capital research, particularly when viewed through the prism of social networks. While social exchange theory is concerned with the quality of the interactions within a network, social capital theory has focused attention on the nature, structure and resources embedded within that network. The
essence of these theories, as they relate to plural leadership, is that influence is a collective phenomenon rooted in social exchange. Social exchange theory supports the notion that all interpersonal dynamics, including influence, develop from relational ties and the pattern of exchange between individuals. Exchange relationships generate influence and the “ability to exert interpersonal influence is given to those who influence by those who are influenced by them” (Seers, Keller & Wilkerson 2003, p. 83). Social exchange theory assumes bi-directional interactions where the reciprocal relationship ensures that “something has to be given and something returned” (White, Currie & Lockett 2014, p. 732) and “this reciprocity engenders the elaboration of the differentiated roles of group members” (Seers, Keller & Wilkerson 2003, p. 83). Furthermore, social exchange theory highlights that “the quality of social interactions of actors within their networks is increased by sharing in leadership responsibilities” (White, Currie & Lockett 2014, p. 732). Therefore, influence is not limited to appointed leaders but distributed among others and it is surmised that in high-quality social exchange relationships, group members would have mutual influence over each other. The quality of these reciprocal influence relationships has been shown to be enhanced through transformational leadership behaviours. These build social exchange relationships by being “prosocial” (Chun, Cho & Sosik 2016, p. 377) and are viewed as a “key aspect of the context that affects team members’ ability to benefit from working with each other” (Gupta, Huang & Yayla 2011, p. 33). In summary, social exchange relationships are supported from a transformational leadership context because this form of influence behaviour facilitates a positive prosocial and developmental benefit that enables ongoing reciprocal influence relationships (Chun, Cho & Sosik 2016; Gupta, Huang & Yayla 2011).

Like social exchange theory, an intrinsic characteristic of social capital theory is that it is relational and inheres in the ties developed between individuals. Social capital theory elicits an understanding of the structure and nature of influence relationships within groups and emphasises the importance of collective participation and joint ownership. Social relations and networks are available to, and developed by, individuals and groups for their individual and mutual benefits (Motkuri 2018). Social capital theory extends the notion that leadership resides in the relational ties among individuals. It does this by emphasising the collective ownership and endowment of those ties and the patterns of those influential relationships. The implications for leadership studies are that leadership is pluralistic and it is the pattern and structure of those influence exchange relationships that are expected to have an impact on the collective functioning of the group. In this context, leadership is viewed “as networks” (Antonakis & Day 2018, p.122), with the understanding that it is important to examine the patterns of those relationship ties at a group level.
A growing body of evidence in the areas of social exchange theory and social capital theory supports the premise that exchange relationships generate influence. These influence relationships engage participants in interdependent, reciprocal patterns of interaction. The stability of those relationships is maintained when participants continue to respond to each other through high-quality social exchange relationships. Social capital theory extends these foundations by emphasising the collective nature of those relationships and the importance of structure and patterns of relational ties. The implications for leadership research highlight the importance of examining patterns of high-quality influence relationships from a collective perspective.

3.4 Synthesis of existing leadership theory and research

The extensive review of research provided in the preceding chapter, in association with the summaries of various studies outlined in the appendices, provide testimony to the fact that there has been recent and growing interest in collective modes of leadership. This paradigm reflects a shift in the focus of leadership research; from understanding the actions and interactions of “leaders” to examining the emergent, informal, and dynamic “leadership” brought about by members of the collective itself. Various labels including team, relational, distributed and shared, have been used to describe this collective leadership phenomenon (Table 3-1). While there are some inconsistencies and contradictions evolving from the interchangeable use of some of these terms, there remains a foundation of understanding that collective leadership is a property of the group rooted in both social and relational exchange.

Table 3-1: Definitions of different forms of plural leadership

<table>
<thead>
<tr>
<th>Leadership Type</th>
<th>Definition</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Leadership</td>
<td>“an emergent interactive dynamic that is a product of adaptive team outcomes”</td>
<td>(Uhl-Bien, Marion &amp; McKelvey 2007, p. 299).</td>
</tr>
<tr>
<td>Relational Leadership</td>
<td>“a social influence process through which emergent coordination and change are constructed and produced”</td>
<td>(Uhl-Bien 2006, p. 654).</td>
</tr>
<tr>
<td>Distributed Leadership-Organisations</td>
<td>an “aggregate of separate individuals, sets of small numbers of individuals acting in concert or larger plural-member organisational units”</td>
<td>(Gronn 2002, p. 428)</td>
</tr>
<tr>
<td>Distributed Leadership-Teams</td>
<td>“leadership is drawn from teams as a function of the processes associated with people working together to accomplish shared work”</td>
<td>(Day, Gronn and Salas 2004, p. 858)</td>
</tr>
<tr>
<td>Shared Leadership</td>
<td>“an emergent team property of mutual influence and shared functional responsibility among team members”</td>
<td>(Carson, Tesluk &amp; Marrone 2007; Ensely, Hmieleski &amp; Pearce 2006; Hoch, Pearce, &amp; Welzel 2010; Pearce &amp; Conger 2003; Pearce &amp; Sims 2002; Sivasubramaniam et al. 2002).</td>
</tr>
<tr>
<td>Leadership Type</td>
<td>Definition</td>
<td>Authors</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Plural Leadership</td>
<td>“a collective phenomenon that is distributed or shared among different people, potentially fluid, and constructed in interaction”</td>
<td>(Denis, Langley &amp; Sergi 2012, p. 212)</td>
</tr>
</tbody>
</table>

Relational leadership theories, therefore, provide an important basis for conceptualising collective leadership as embedded in the processes of social and relational construction (Dachler & Hosking 1995; Hosking & Bouwen 2000; Hunt & Dodge 2000). This dynamic process is based upon complex reciprocal relationships that can be visualised as mutually dependent, bidirectional and symmetric influence behaviours. Consequently, leadership is occasionally described as emerging “in the spaces in between” colleagues (Bradbury & Lichtenstein 2000; Harris & Spillane 2008; Uhl-Bien, Marion & Mckelvey 2007) or as a leader follower “double interact” (DeRue 2011). When one person engages in leading, those influence behaviours are contingent upon others following. Therefore participants “co-construct the process of leading and following through mutual influence and the interdependent acts of leading and following” (DeRue 2011, p.129). If leadership is a jointly shared and created outcome, then followers or subordinates are no longer simply entities to be influenced by leaders, rather they are participants in a process of dynamic and mutual collaboration (Barker 2001; Drath et al. 2008; Gronn 2002a). Most importantly, leadership is both an emergent and endogenous behavioural phenomenon that is a result of the developing relations between interdependent members of a social network. Additionally, these mutually dependent relationships display fluidity such that participants can be leading and/or following at different times according to the requirements of the group. This interaction of leader-follower relationships produces distinct patterns over time in groups and it is this topography and topology that is the centre piece of this research.

While both distributed and shared leadership theory, and much of the associated research in these areas, use a relational lens to explore plural leadership forms, they do so from independent and alternate ontologies. While shared leadership is predominantly team based, distributed leadership theory and research, has traditionally been focused at the organisational level and has principally developed either a “descriptive-normative” or “descriptive-analytical” paradigm within the educational sector (Tian, Risku & Collin 2016). At the same time, while distributed leadership has suffered from a lack of a universal definition and purpose (Bolden 2011; Tian, Risku & Collin 2016), one commonality within much of the research is that scholars have viewed leadership as emerging from coalitions in which multiple group members are engaged in sequential acts of leading and following. In comparison, many shared leadership
scholars interpret the acts of leading and following in teams as occurring concurrently. Shared leadership is not conceived as the alternation of leadership influence but rather as the collective emergent process of group interaction. So that “individuals in a shared leadership structure are consistently and collectively engaging in acts of leading and those acts are mutually reciprocated by collective acts of following, which are then reinforced and reciprocated by subsequent acts of leading among group members” (DeRue 2011, p. 135).

Although both distributed and shared leadership have, for all intents and purposes, remained as two separate independent discussions in either the educational research or management and organisational studies streams, there are several important bodies of literature and some research that supports their coalition. The first is a paper by Gronn (2002) in which he explores distributed leadership as a unit of analysis within organisations and teams. In this conceptual discussion he emphasises that leadership may emerge from “an aggregate of separate individuals, sets of small numbers of individuals acting in concert or larger plural-member organizational units” (p. 428). In addition, he notes that the “duration of the attributed influence may be short or long term” and that a numerical view of leadership “allows for the possibility that all organization members may be leaders at some stage” (Gronn 2002, p. 429). For Gronn (2002) the underlying principle that supports the distribution of leadership was conjoint agency. This evolved through the reciprocal impact between two or more participants who, via recurring “successive phases of influence” experienced bidirectional mutual relationships as either leaders or followers within the leadership process and, in turn, both influenced colleagues and were influenced in return. Conjoint agency therefore has at its heart an emphasis on the importance of social and relational exchange involving multiple participants enacting multiple roles. Gronn (2002) saw these patterns of reciprocal and collective influence as central to the idea of team leadership. In addition, his taxonomy of conjoint agency distinguished teams as a focal point emphasising both collective and co-leadership performance.

The focus of distributed leadership in teams has also been elaborated and supported by the work of Day, Gronn and Salas (2004). The authors used the terms shared and distributed interchangeably in developing a model depicting the team leadership cycle. These plural forms of leadership were used to denote elements of team leadership capacity, which were viewed as outcomes of both teamwork activity and team learning. Distributed and shared leadership within the team were viewed from the perspective of “role space occupancy” or the “properties of the relations between the unit members” (Day, Gronn & Salas 2004, p. 875).
In conjunction with a developing body of theoretical literature, a small number of scholars have applied the concept of distributed leadership to the field of team research. This divergent focus has included an assortment of different types of teams within a variety of organisational settings. However, despite that mixture there have been some constant themes. Firstly, several of the qualitative researchers noted that distributed leadership was an emergent phenomenon (Barry 1991; Rydenfalt et al. 2015; Scribner et al. 2007) that arose through social and relational interactions and the concomitant or sequential sharing of different leadership roles. These reciprocal social and relational dynamics were frequently described in the context of concertive action and conjoint agency (Gronn & Hamilton 2004; Hulpia & Devos 2010; Inglis & Saros 2003).

Secondly, some research also highlighted the importance of various situational elements that enabled the emergence of distributed leadership activity in teams. Results suggested that distributed leadership was well suited to environments characterised by high levels of trust, values congruity (Bush & Glover 2012), complexity and ambiguity (Brown & Gioia 2002). While this research has provided a limited understanding of conditions that support distributed leadership practice in teams, several authors have cited positive relationships with either organisational, team or individual performance outcomes.

This third group of research examined the relationship between distributed leadership in teams with organisational, team and individual level emergent states or outcomes. At an organisational level, Lindgren and Packendorff (2011) underlined that distributed leadership within R&D project teams had a positive impact on project management initiatives and organisational change. Alternatively, Gronn and Hamilton (2004) concluded that concertive work relationships between co-principals had a positive effect on a school’s organisational capability. Senior school leadership teams that demonstrated distributed influence in the form of concertive action were also found by Hulpia and Devos (2010) to have a direct impact on levels of individual teacher commitment. There was also some empirical evidence to support the relationship between distributed leadership and team performance outcomes. For example, Dinham, Aubusson and Brady (2008) concluded that distributed leadership was a contributing factor in the development of effective teams and action learning. Similarly, Barry (1991) in a comparative analysis found that the more successful self-managed team contained multiple leaders who shared different types of leadership roles within the group. Finally, an empirical and quantitative analysis undertaken by Mehra et al. (2006), demonstrated that higher team satisfaction scores and higher team sales figures were achieved by groups that demonstrated coordinated distributed leadership patterns. While this work provides a small window of understanding, a more substantive awareness of the anatomy of distributed leadership in teams...
is needed so that scholars can better understand the significant relationships between distributed leadership in teams, team processes and performance outcomes.

The final research stream examined a plural form of leadership that is seen to evolve through team members’ interactions and mutual influence processes. Within this milieu, team leadership functions are voluntarily shared among team members in the pursuit of team goals. Consequently, shared leadership is viewed as a group level construct and a property of the team (Carson, Tesluk & Marron 2007). Furthermore, scholars have emphasised both the relational and social interactions as foundations of the collective enactment of leadership. These social and relational processes are emergent and dynamic. Group members switch between a multiplicity of leader and follower roles and over time different identities and relationships emerge to form group-level structures that illustrate distributed patterns of leadership influence. Because of these dynamics and structures, groups can develop “leaderful practice” (Raelin 2011) with everyone participating in leadership collectively and concurrently. While these practices might at times be reactive to external conditions, it is also clear that these social and relational processes create conditions that enable group effectiveness.

Research summarised in Appendix D clearly illustrates that shared leadership fosters positive outcomes not only for individuals (Hooker & Csikszentmihalyi 2003; Khasawneh 2011; Robert & You 2013; Wood & Fields 2007) but also for teams (Brown & Gioia 2002; Carson et al. 2007; Ensley, Hmieleski & Pearce 2006; Erkutlu 2012; Hoch 2013; Hoch & Kozlowski 2014; Mehra et al. 2006; Pearce & Sims 2002; Small & Rentsch 2010). Each of these studies have shown a positive and significant relationship between shared leadership and various outcomes and several meta-analyses undertaken by D’Innocenzo, Mathieu and Kukenberger (2014), Nicolaides et al. (2014) and Wang, Waldman and Zhang (2014) have provided further consistent evidence that supports the validity and utility of shared leadership practice in teams. At the same time, while both vertical and shared leadership have been found to enhance team performance, shared leadership has important effects on team performance, over and above the effects of vertical leadership (Ensley, Hmieleski & Pearce, 2006; Nicolaides et al. 2014; Pearce & Sims 2002; Wang, Waldman & Zhang 2014). While scholars have developed some clarity in relation to the impact of shared leadership on various performance criteria, there has been less research focused on what conditions support shared leadership or how it is related to emergent states.

Some of these potential antecedents have been outlined in conceptual models (Bligh, Pearce & Kohles 2006; Burke, Fiore & Salas 2003; Cox, Pearce & Perry 2003; Dust & Ziegert 2016; Hoch 2013; Perry, Pearce & Sims 1999; Vandewaerde et al. 2011) and included conditions that
embrace individual factors (such as self-leadership, members’ attitudes and locus of control),
along with team level variables that promote key affective and behavioural components (like
shared mental models, team potency and proximity) and task and environmental factors. Those
scholars who have researched antecedents have stressed that shared leadership has developed
in conditions that include positive, supportive team environments (Carson, Tesluk & Marrone
2007; Daspit et al. 2013) that were characterised by empowerment (Grille & Kauffeld 2015),
collectivism and trust (Small & Rentsch 2010). The formal leader also played an important role
in establishing the environment for shared leadership with both transformational and
empowering leadership behaviours acting to facilitate shared leadership in teams (Fausing et al.
2015; Hoch 2013).

A few authors have also emphasised the importance and need to investigate the psychological
and team-based mechanisms that explain how shared leadership is related to performance
outcomes (Carson et al. 2007; Avolio et al. 2009; Conger & Pearce 2003; Hoch 2013). Other
authors have also provided specific conceptual models that have illustrated hypothesised
relationship between shared leadership and several emergent affective, cognitive and
behavioural states at both an individual and team level (Ensley, Pearson & Pearce 2003;
Initial research has shown that when shared leadership practices are evident in teams then
team members engage in greater collaboration, coordination and cooperation (Pearce, Yoo &
Alavi 2004; Manz & Sims 1993; Solansky 2008). Shared leadership practices have also been
shown to have a positive impact on team potency, group trust, cohesion and efficacy (Avolio et
al. 1996; Balthazard et al. 2004; Bergman et al. 2012; Boies, Lvina & Martens 2010; Neubert
1999; Sivasubramaniam et al. 2002). At the same time, shared leadership has a positive and
significant impact on individual levels of job satisfaction, trust, learning and citizenship
behaviours (Khasawneh 2011; Liu et al. 2014; Robert & You 2013). These independent research
findings have been recently supported by two meta-analyses conducted by Nicolaides et al.
(2014) and Wang, Waldman and Zhang (2014). In an analysis of 52 objective research findings
Nicolaides et al. (2014) determined that shared leadership contributed to team performance
through the enactment of two motivational emergent states, collective efficacy and potency.
Correspondingly, Wang, Waldman and Zhang (2014) established that shared leadership was
connected more strongly with attitudinal outcomes, behavioural processes and team emergent
states than with actual subjective and objective team performance outcomes. The authors saw
that aspects of team processes and the emergent states that arose from shared leadership may
subsequently produce higher levels of team performance. These findings parallel key constructs
outlined in models of team leadership (Zaccaro, Rittman & Marks 2001) and team research
(Mathieu et al. 2008) both of which have described several other prevailing emergent states that may be employed to garner a better understanding of how shared leadership effects team processes and outcomes.

While the focus of earlier discussion has plainly placed both distributed and shared forms of plural leadership within the crucible of an emergent relational phenomenon, this small constellation of conceptual and empirical work is also encapsulated by a backdrop of both team and team leadership processes. The interface between team processes and relational, plural and team leadership suggests that dynamics associated with plural and relational leadership will influence and be influenced by team practices and team performance (Zaccaro & Klimoski 2002). In this context team leadership and plural leadership in teams may be viewed as one and the same and the association between leadership behaviours, emergent states and team performance outcomes, no matter whether the leadership function is shared or held only by a vertical team leader, would not be different (Burke et al. 2006). In this sense plural leadership in teams is functional as the focus of the leadership role is to ensure that all team functions critical to both task and team maintenance are accomplished. However, this is achieved through focusing on leadership behaviours that create supportive enabling conditions for team effectiveness (Hackman 2012). These person-focused behaviours facilitate the behavioural interactions, attitudes and cognitive structures that are essential so that team members work effectively together (Burke et al. 2006).

While a platform exists for the coalescence of team and plural leadership processes, it is important to establish boundaries so that plural leadership can be differentiated from the team processes within which they are embedded. There is the danger that by pluralising leadership, it may lead to the disintegration of the notion of leadership altogether as concepts like empowerment and teamwork may appear as interchangeable (Lakomski 2008; Sergi, Denis & Langley 2015). Rather than focus on the leadership of teams this paper concentrates on leadership that develops within teams and its effects on team processes. Therefore, plural leadership stresses distributed influence and responsibilities among team members that support team cognitive, motivational and affective processes (Zaccaro, Rittman & Marks 2001). In contrast, teamwork pertains to a set of dimensions that focus on activities such as communication, coordination, cooperation, task interactions, shared workload and the use of member expertise to facilitate team effectiveness (Ilgen et al. 2005; Valentine, Nembhard & Edmondson 2012). The centrepiece of plural leadership in teams is that it involves a social interaction. Participants engage in repeated interactions that are socially constructed as leadership. Therefore, in measuring those plural leadership interactions it is important to focus
on recognised leadership behaviours that support social and relational ties and sustain cognitive, motivational and affective team processes.

The research findings and theoretical frameworks outlined in earlier chapters have focused attention on the primacy of relations with the domains of distributed and shared leadership. At the same time, these elements are set with a broader context of both team leadership and team processes (Figure 3-1). Recent research has begun to support the contention that shared and distributed leadership in teams both demonstrate something unique in their topology of influence relationships that strengthens team processes and extends our capacity to predict collective team outcomes. It is the intention of this research to support and advance these findings by addressing a series of research questions outlined below.

**Figure 3-1: The primacy of relations within the domains of team, distributed and shared leadership**

### 3.5 Research Model

This research views leadership as a collective team level property developed within the crucible of social exchange theory and social capital theory. The research model (Figure 3-2) builds on the conceptual and theoretical frameworks outlined in the previous sections and develops various notions inherent in that research such as conjoint agency (Gronn 2002), distributed leadership in teams (Day, Gronn & Salas 2004) and group level constructs integral to shared
leadership literature (Carson, Tesluk & Marron’s 2007). The research paradigm illustrated in Figure 3-2 combines components and structures emphasised in earlier work by both Day, Gronn and Salas (2004) and Carter & Dechurch (2015). These frameworks conceptualise leadership as a “social relational phenomena” (Carter & Dechurch 2015, p. 413) within networks of influence relationships that are expressed through the “sharedness, distributedness and connectivity” of leadership (Day, Gronn & Salas 2004, p. 862) within teams.

The model (Figure 3-2) posits that transformational leadership behaviours enhance the quality of those influence relationships. Transformational leadership is built through networked relationships among individuals in teams. Plural transformational leadership occurs when more than one person in a team is identified as affording others, specific influence behaviours, such that they are characterised as transformational. These transformational behaviours include inspirational communication, intellectual stimulation, support and personal recognition.

(Carter & Dechurch 2012; Day, Gronn & Salas 2004)

Figure 3-2: Research Model

This conceptual expression of plural leadership is supported by theoretical foundations expressed in both social exchange and social capital theory. It endorses the contention that exchange relationships generate influence and norms of reciprocity play a central role in the influence process. In addition, it emphasises the importance of the quality of those influence ties and the need to understand the structure and patterns of influence relationships.
Elements of social capital theory also emphasise the importance of understanding the pattern and structure of these transformational influence exchanges. In contrast to an aggregation approach, this research facilitates a network analysis to consider the degree to which each individual group member engages in transformational leadership processes. This is enabled by examining transformational leadership as a network in which influence ties are shared, distributed and reciprocated. Consequently, members of a group not only contribute as followers, but they also participate as leaders (Kort 2008).

These patterns of plural influence in teams are conceptualised as important team level resources. It is hypothesised that these resources will have a positive effect on team level outcomes. These are in the form of proximal outcomes such as teamwork and affective and behavioural states. The proposed relationships outlined in this research are supported by past work in the areas of shared, distributed, team and relational leadership (Figure 2-6). A more specific description of the suggested relationship between plural transformational leadership and each dependent variable is outlined in the section below.

3.6 Social and Relational Interaction

The primacy of social processes and relationships are repeatedly emphasised in shared, distributed and relational Leadership theories. Leadership, rather than being the property of individuals, emerges as an outcome of collective, complex social dynamics and the mutual influence that occurs among a group of people (Avolio, Walumbwa & Weber, 2009; Bennett et al. 2003; Carson 2005; Day, Gronn & Salas 2004; Drath 2001; Harris 2008; Spillane, Halverson and Diamond’s 2004; Woods, et al. 2004). The collective forms of leadership theory described in the reviews each represent a new ontology of leadership practice. Elements of their theoretical frameworks complement the importance of social processes and relational interactions. Leadership cannot be understood apart from these social processes and relationships. Most importantly, leadership is an emergent and endogenous behavioural phenomenon that is a result of the developing relations between interdependent members of a social network.

While plural leadership in teams has been measured in a variety of different ways (Conger & Pearce 2003), adopting a relational-structural approach (Fitzsimons, James & Denyer 2011) can facilitate a better understanding of the systems of leadership relations within groups. This approach supports the primacy of relations between team members (actors) and explores “the ubiquity of actors’ embeddedness in social fields, the social utility of network connections, and the structural patterning of social life” (Balkundi and Kilduff 2005, p. 942). The unit of analysis then is the relationship between team members, and it is measured by using a quantitative method called social network analysis (SNA). This technique supports a team level analysis of
leadership as it describes leadership networks and patterns of influence relationships connecting individuals within the team. Social network measures can be computed to answer a variety of different types of shared leadership questions. This research method has been promoted and adopted by a small but growing cohort of independent scholars (Balkundi & Kilduff 2005; Berdahl & Anderson 2005; Carson, Tesluk & Marrone 2007; Chiu, Owens & Tesluk 2016; Friedrich et al. 2009; Gockel & Werth 2010; Ishikawa 2012; Hoppe & Reinelt 2010; Liu et al. 2014; Mehra et al. 2006; Martin et al. 2013; Mendez & Busenbark 2015; Pastor & Mayo 2002; Ramthun 2013; Small & Rentsch 2010; White, Currie & Lockett 2014; Wu & Cormican 2016) who have adopted one of two social network measures to assess the team as a network. These whole network measures include density and centralisation. The former refers to the number of leadership links or relationships that occur in the team in proportion to the number of possible links in the team. Dense networks imply a greater number of leadership interactions among members of the network. The later measure, centralisation, shows how much team members differ in their influence over each other. If all members of the team (network) participate equally in displaying leadership influence behaviours, then the team will display a high level of distribution of leadership and the score for leadership centralisation will be low. Each of these measures identifies a unique characteristic of plural leadership in teams. Network density identifies the number of leadership ties in the team and therefore can be used to assess leadership quantity in a team. Alternatively, network centralisation is a measure of how distributed leadership practices are within the team.

These two SNA indices have been used to assess plural leadership in a variety of different teams, including student groups (Berdahl & Anderson 2005; Martin et al. 2013; Small & Rentsch 2010), consultancy, research and development, sales and combat teams (Carson, Tesluk & Marrone 2007; Mehra et al. 2006; Ramthun 2013) and in regions that include Taiwan (Chiu, Owens & Tesluk 2016), Japan (Ishikawa 2012) and China (Liu et al. 2014). Furthermore, they have disclosed relationships between plural leadership and team level outcomes such as positive team mental models (Martin et al. 2013), subjective and objective performance measures (Carson, Tesluk & Marrone 2007; Chiu, Owens & Tesluk 2016; Ishikawa 2012; Ramthun 2013; Small & Rentsch 2010) and team and individual learning (Liu et al. 2014). While not all the independent research illustrated positive relationships between SNA measures of plural leadership and team performance measures (Mehra et al. 2006), results from more recent meta-analysis provided support for the use of both density and network centralisation methods (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014).
While both density and centralisation measures provide important information about the strength and source of plural leadership, they do not directly assess the quality of leadership relationships in the team. Having applied a social exchange lens to plural leadership it is important to recognise the reciprocal nature of shared and distributed leadership in teams. At any given point in time a team member can demonstrate leadership behaviours and be temporarily taking an influence role (leader) towards other team members who are influenced (follower) by those behaviours. This interaction can happen in a multiplicity of occasions as each team member can be a leader in one situation and a follower in another with different team members within a short duration of time. Therefore, from a social exchange perspective plural leadership evolves through an unfolding series of situationally appropriate exchanges of influence and is viewed as a mutually contingent and mutually rewarding process (Muethel & Hoegl 2012). Reciprocity, which is essentially centred on mutuality, is fundamental to these exchanges. Norms of reciprocity have been the focus of research in a variety of fields. Results have generally shown strong support for the role of reciprocity in relationship development and it is an important norm that drives knowledge sharing (Endres & Chowdhury 2013), commitment (Jia et al. 2007), helping and organisational citizenship behaviours (Deckop, Cirka & Andersson 2003; Liden et al. 2003), trust (Sanders & Schyns 2006), helping behaviours (Koster & Sanders 2006) and positive relationships between managers and team members (Jia et al. 2007; Uhl-Bien & Maslyn 2003). While several authors have discussed the importance of reciprocal relationships within the context of shared leadership and have highlighted the need to investigate different shared leadership structures in teams (De Rue 2011; Seers, Keller & Wilkerson 2003; Muethal & Hoegl 2012), there is no research that explores those reciprocal leadership structures. The bi-directional leadership interactions in teams can be evaluated in SNA by examining the ratio of team member relationships within reciprocated ties. This, in conjunction with density and centralization measures, can provide assessments of the quality, strength and distribution of plural leadership relationships within teams.

While measures of density, centralisation and reciprocity provide an indication of who is exerting leadership influence, it is also critically important to assess how their influence is asserted. The effects of different styles of shared leadership behaviour in teams have been shown to have varying impacts on team outcomes. Specifically, those leadership behaviours described as “new genre” (Avolio, Walumbwa & Weber 2009; Wang, Waldman & Zhang 2014). This aggregate of styles includes both empowering and transformational approaches. These have been shown to catalyse the emergence of plural leadership activity in groups (Barnett & Weidenfeller 2016) with Denis, Langley and Sergi (2012) suggesting that “transformational leaders develop the leadership potential of followers and consequently favour the emergence
of more plural forms of leadership” (p. 244). Transformational leadership is highly representative of this ‘new genre’, has been shown to positively influence team effectiveness (Judge & Piccolo 2004) and is especially suited to team environments that emphasise change and development (Wang, Waldman & Zhang 2014).

Some authors have criticised the adoption of “inherently hierarchical leadership themes” (D’Innocenzo, Mathieu & Kukenberger 2016, p. 1970) to describe and evaluate plural leadership behaviours in teams (De Rue 2011; D’Innocenzo, Mathieu & Kukenberger 2016; Morgeson et al. 2010). However, it is critical to differentiate leadership activities from team processes by utilising dimensions of leadership behaviour that have a substantiative theoretical foundation and have been empirically tested (Judge & Piccolo 2004). At the same time, some scholars promote and support the assertion that behaviours incorporated in the transformational leadership construct can be positively allied to team processes and team leadership (Burke et al. 2006). However, it is also important to recognise that some components of the traditional instrument that have been used to measure the formal leader’s transformational leadership behaviours, when thought of as a group-level phenomenon, might be inappropriate when assessing leadership as a collective process. For example, if everyone in the team is voicing their vision, and there are high levels of shared visionary behaviour, then the team may lose its focus and become distracted from its work (Nicolaides et al 2014). Consequently, Wang, Waldman and Zhang (2014) have suggested that certain leadership behaviours may lend themselves better to sharing than others and so to avoid confusion, future research may need to clearly separate shared visionary behaviour from the teams shared vision.

Finally, there are a small but growing number of scholars who have utilised different forms of transformational leadership questionnaires to develop an aggregate measure to assess collective leadership behaviours (Avolio et al. 1996; Balthazard et al. 2004; Berdhal & Anderson 2005; Boies, Lvina & Martens 2010; Ensley et al. 2006; Fashing et al. 2013; Hoch 2013; Hoch 2014; Hoch, Pearce & Welzel 2010; Ishikawa 2012; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Sivasubramaniam et al. 2002). Alternatively, at the same time, there has been a growing interest in SNA to assess plural leadership roles and behaviours in teams (Carson, Tesluk & Marrone 2007; Chiu, Owens & Tesluk 2016; Liu et al. 2014; Martin et al. 2013; Mehra et al. 2006; Mendez & Busenbark 2015; Ramthun 2013; Robert & You 2013). Nevertheless, only one research paper (Small & Rentsch 2010) has examined the distribution of plural transformational leadership behaviours in teams by using SNA (centralisation). Consequently, there are a variety of opportunities and research hypothesis that can direct this research to developing a better understanding of this important facet of plural leadership in teams. These hypotheses will be
outlined below in conjunction with the potential analysis of emergent states and dependent variables.

3.6.1 Interdependent Actions

How individuals engage in plural action, in both social processes and more formal role relationships, is an important determination of the formation and emergence of leadership in groups. The type, quality, frequency and intent of their interdependent actions will determine the nature of leadership within groups. The movement from singular activity to joint processes is described by Gronn (2002a) as concertive action. In order that concertive action emerges each member of the group acts conjointly so that they are “synchronising their action by having regard to their own plans, those of their peers and their sense of unit membership” (Gronn 2002, p. 431). Where conjoint agency occurs, and people work together in such a way that they pool their initiative and expertise, the outcome is not only synergy, but outcomes may also include the possibility of maximising creativity, widening the breadth of relevant information and data and providing improved collective judgement. This form of plural action is also highlighted by Drath (2001) and Drath et al. (2008) who, in emphasising leadership as the property of a social system, described this interpersonal dynamic as a specific communal leadership outcome that they labelled commitment. In this context commitment refers to the willingness of members of a collective to subsume their own interests, efforts and benefits within the collective effort and benefit of the group (Drath et al. 2008).

For conjoint agency, bonding or commitment to be ubiquitous within a group, joint plural action must be apparent. Group members must actively participate while performing joint plural action and members must intend to work cooperatively, in conjunction with one another, rather than work in dependent, co-dependent or independent relationships. Therefore, it is the nature of the participation in the series of plural actions within a group that determines leadership (Kort 2008).

The developing areas of collective leadership described in the literature review share several characteristics that researchers consider important context for the emergence of leadership with groups or teams. One of the critical antecedents are the need for “independent” or interdependent relationships, coordination and mutuality. These relationships are based on the mutualism of associations that evolve from cooperative, intentional joint plural actions (Kort 2008). The emergence of leadership practices can be viewed as falling along a developmental continuum (Carson, Tesluk & Marrone, 2007; Gibb 1954; Gronn 2002a). In a collective leadership environment, “independent” relationships form one end of the continuum. In complex environments, the sharing or distribution of leadership may emerge through
“independent” relationships. In these situations, leadership surfaces spontaneously from within the cooperative, intentional joint plural actions primarily because one or several individuals make decisions that are endorsed by others.

Conversely and at the other end of the continuum, leadership emerges from coordinated interdependent formal or informal practices (Avolio, Walumbwa & Weber 2009; Carson 2005; Carson, Tesluk & Marrone 2007; Day, Gronn & Salas 2004). People within the group share task responsibilities and/or their roles overlap. Task interdependence is reciprocal, so that the activities of all individual group members are entwined, and each person is fully dependent on the other. Each member’s performance influences the performance of every other member of the group. These corresponding interdependent tasks and roles result in complementarity and reinforcement as group members capitalise on individual strengths and enhance their own skill development through frequent observation and discussion. Task and role interdependence effect a milieu characterised by close intuitive working relationships and mutuality, as individuals effectively work together within a common framework of understanding. It is this relational synergy within the common role spaces that distinguishes this form of intentional joint plural actions. The quality of relational synergy and the depth and scale of these interdependent actions result in an increase in the capacity and reserves of overall leadership capability that will emerge from within the group.

The central importance of interdependence within teams has been well represented in both team and collective leadership research. Interdependence is regarded as a defining characteristic of teams (De Church & Mesmer-Magnus 2010; Kozlowski & Bell 2003; Mathieu et al. 2008) and includes a variety of different forms which embrace task, process, goal and structural outcome interdependence (Courtright et al. 2015; Mathieu et al. 2008; Nicolaides et al. 2014). While definitions of interdependence vary, one of the more frequently used references define it as “the extent to which team members cooperate and work interactively to complete tasks” (Stewart & Barrick, 2000, p. 137). The construct is prominent in much of the empirical work that explores team dynamics. In this literature, it has been featured as an input, moderator, outcome and boundary condition (Kozlowski & Bell 2001; Mathieu et al. 2008). However, it has most frequently been used by scholars to explicitly examine its impact as a moderator between independent and dependent variables or emergent states.

Scholars in the areas of team and team leadership research have repeatedly demonstrated the importance of task interdependence as a moderator. Contributions in this area include a diversity of meta-analysis (Gully et al. 2002; Lepine et al. 2008; Stajkovic, Lee & Nyberg 2009) and independent studies. These have emphasised how task interdependence has significantly
moderated the relationship between independent variables (such as team behavioural processes, team efficacy, team cognition) and team outcomes that have included team performance, job satisfaction, team satisfaction and learning (DeChurch & Mesmer-Magnus 2010; Gully et al. 2002; Kozlowski & Bell 2003; Lepine et al. 2008; Sorenson 2003; Stajkovic, Lee & Nyberg 2009). When task interdependence in a team is high there are more interpersonal interactions, high levels of distributed expertise and influence and a greater need for coordination and the integration of activities amongst team members. This level of interdependence supports team processes and facilitates both individual and team level emergent states, such as team cognition, affective of motivational processes. In turn, these can lead to greater team effectiveness as interdependence between team members increases (DeChurch & Mesmer-Magnus 2010; Gully et al. 2002; Stajkovic, Lee & Nyberg 2009). Within this evolving exchange team leadership has been shown to have a significant impact between the interdependence of team members and team processes, outcomes and emergent states. For example, in a meta-analysis of 231 independent research papers, Burke et al. (2006) concluded that “leadership in teams is relatively more important in achieving efficacious team performance outcomes when task interdependencies are higher” (p. 299). These results were mirrored in the findings of a meta-analysis of 51 empirical studies in which the authors explored the relationships between shared leadership and team performance (Nicolaides et al 2014). The results revealed several conditions in which shared leadership was more strongly related to team performance outcomes. Evidence demonstrated that “shared leadership is particularly effective when interdependence is high” (Nicolaides et al 2014, p. 935) and, as interdependence promotes greater contact and familiarity between team members, it would “make members more open and amenable to the exercise of influence” (Nicolaides et al 2014, p. 935).

Researchers have clearly established that task interdependence is an integral and distinguishing aspect of teams (Kozlowski & Bell 2001; Mathieu et al. 2008; Morgeson & Hofmann 1999). However, few researchers have considered the impact of plural leadership dynamics on encouraging task interdependence within teams. This potential association becomes acute when considering the dimensions of transformational leadership. Specific elements of transformational leadership, such as individualized consideration, intellectual stimulation and inspiration motivation, may produce key intermediate outcomes that positively impact task interdependence within teams (Dionne at al. 2004). These hypothesised relationships are described in detail by Beverborg et al. (2015). For example, the authors outline how members of a teaching team would feel empowered by a transformational leader who demonstrates individual consideration and consequently seek “to interact with other teachers and coordinate responsibility in the tasks they share” (Beverborg et al. 2015, p.193). Furthermore, the same
authors found that both individual consideration and intellectual stimulation had a direct and positive effect on task interdependence. Specifically, they noted that “intra-individual increases in transformational leaders’ consideration and stimulation practices lead to intra-individual increases in perceptions of the need to interact to complete tasks” (Beverborg et al. 2015, p. 201).

While the relationships highlighted by both Dionne et al. (2004) and Beverborg et al. (2015) focused on individual leadership behaviours, it is important to recognise that some authors have affirmed that interdependence acts as both an important independent variable and moderator that positively affects shared leadership practice and team performance outcomes (Fausing et al. 2015; Nicolaides et al. 2014). Task interdependence has been found to strengthen the relationship between shared leadership and knowledge sharing, team performance and team effectiveness (Gu et al. 2018; Hiller, Day & Vance 2006; Nicolaides et al. 2014). Furthermore, other studies which have focused on executive management teams and consulting groups (Carson, Tesluk & Marrone 2007; Ensley, Hmieleski & Pearce 2006), have demonstrated that shared leadership appears to enhance group performance in different team contexts. These settings were characterised as having high levels of task interdependence. In a similar vein, the reported findings of a meta-analysis of 42 independent studies by Wang, Waldman and Zhang (2014) emphasised that in highly complex environments, where work is more knowledge based and interdependent, there is a stronger positive statistical relationship between shared leadership and team outcomes.

Though interdependence has been shown to moderate and positively affect collective leadership outcomes, it is also likely that the behaviours, relationships and interactions inherent in emergent pluralist leadership provide a suitable context for the implementation of task interdependence. Theoretically, plural leadership should be beneficial in all types of team environments “because the shared enactment of leadership roles provides an increased capacity for getting things done” (Hiller, Day & Vance 2006, p. 5). These multiple and fluid leadership influences within teams are likely to be critical in supporting interdependent tasks (Bligh, Pearce & Kohles 2006).

For plural leadership to exist within a team, team members must be prepared to engage in the sharing of influence; they must be willing to lead and to be led by others (Small & Rentsch 2010). Furthermore, when teams are experiencing collective influence, supportive behaviours and lateral communication implied by shared leadership, “should enhance shared leadership’s durability by promoting an accurate appreciation among team members of their interdependence” (Cox, Pearce & Perry 2003, p. 64). In these circumstances, shared leadership
and task interdependence within teams form a “virtuous cycle” in which the sharing and
distribution of leadership behaviours and relationships encourage and support the awareness of
member interdependence and the need for close collaboration around the completion of tasks
(Cox, Pearce & Perry 2003). The sharing and distribution of leadership in teams involves mutual
interdependence, such that the reciprocal influence relationship between two or more
members allows for the overlap and complementarity of different technical or emotional
strengths to facilitate and coordinate task responsibilities (Ulhøi & Müller 2014).

Based on this theoretical foundation and taking into account the developing body of work
linking transformational and shared leadership practices with task interdependence, it is
important to explore whether shared, distributed and reciprocal transformational leadership
practices in teams supports the interactions and coordination required for team members to
complete tasks.

Therefore, it is hypothesised that plural forms of transformational leadership in teams are
positively related to task interdependence (H1).

3.7 Plural Leadership in Teams and Team Learning Behaviours

Team learning, while fundamentally based on individual learning, is viewed as a team level
property and process that includes sharing, storage and retrieval of group knowledge, routines
and behaviours (Wilson, Goodman & Cronin 2007). As a construct team learning is embedded
within the remit of team research and literature and as such has been described as both a
performance behaviour, for example, actions that are relevant to achieving goals, and as team
cognitive processes that facilitate both knowledge organisation and acquisition (Kozlowski &
Ilgen 2006; Mathieu et al 2008). One of the challenges for researchers is to distinguish team
learning from related constructs such as team mental models, transactive memory and situated
awareness. Some scholars conceptualise team learning as a process that yields team mental
models and transactive memory among teams (Kozlowski & Ilgen 2006), while others view team
learning as a sub-set of the broader concept of team mental models (Mohammed & Dumville
2001). Clearly, research has yet to determine how these constructs differentially relate to team
processes and outcomes and to each other (Mohammed, Ferzandi & Hamilton 2010).

Even though there is a lack of cohesion in the literature, and research exploring this construct is
in the formative stages, there is considerable interest and enthusiasm for researching team
learning as a critical group outcome or process. (Wilson, Goodman & Cronin 2007). One primary
driver for this increased attention has been the growth in popularity of the concept of
organisational learning (Senge 1990). Learning is described as a fundamental capability of
organisations as it supports the collective capacity to face adaptive challenges and enhance effectiveness. At the same the increased proliferation of team structures within organisations has led to groups becoming an important catalyst for organisational learning with Senge (1990) going as far to suggest that teams are “the fundamental learning units in organizations” and that “unless teams can learn, the organization cannot learn” (p.10). Consequently, there has been a call to better understand the group learning processes and the relational antecedents of learning behaviours. This research evidence has started to gain impetus with a small group of scholars examining factors specific to team composition, context and affective processes. Researchers examining team composition have examined the impact of sub-groups (Gibson & Vermeulen 2003), diversity of expertise (Van Der Vegt & Bunderson 2005) and the variation between each team’s cognitive ability (Ellis et al. 2003) on team learning. The investigation of team context has been limited to the exploration of a small number of different affective processes that include psychological safety (Brueller & Carmeli 2011; Edmonson 1999; Kostopoulos & Bozionelos 2011), group cohesion, commitment and trust (Akgun et al. 2014; Wong 2004).

Team learning has been defined as both a process and an outcome of group interactions. When viewed as a process it is apparent that team learning is contextually based and socially bound (Kozlowski & Ilgen 2006) with work settings providing opportunities for team members to acquire new knowledge. A process-oriented definition of team learning is emphasised by Edmonson (1999) who conceptualised team learning as “an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors” (p. 353). Team learning in this sense is a verb, researchers observe or measure learning as group behaviours and activities. It is through these learning behaviours that learning is enacted at a team level. In contrast other scholars have viewed team learning as an outcome (Burke et al. 2006; Ellis et al. 2003; Wilson, Goodman & Cronin 2007). As an outcome team learning refers to relatively permanent changes in the team’s collective level of knowledge and skills (Ellis et al. 2003). Team learning as an outcome is often inferred from changes in team performance rather than being assessed through fluctuations in the group’s range of potential behaviour (Kozlowski & Ilgen 2006; Wilson, Goodman & Cronin 2007).

Notwithstanding whether team learning is viewed as an outcome or a process, both perspectives recognise that learning is a dynamic behavioural activity characterised by interaction and exchange among team members (Carmeli, Brueller & Dutton 2009; Kozlowski & Ilgen, 2006; Kozlowski & Bell, 2007). Conceptualising team learning behaviour as a relational
process of sharing and exchange, highlights the importance of those relationships and how they can either impede or facilitate the nature of learning dynamics in teams.

At the same time there has also been a recognition of the importance of team learning in the development and emergence of team-level leadership capacity (Day, Gronn & Salas 2004). Leadership is primarily about change (Kotter 1990). Team learning is essential in fostering any kind of adaptation or change. It can build the capacity of groups to deal with challenges and at the same time facilitate a greater versatility for how leadership is enacted in teams (Day, Gronn & Salas 2004). While team learning is an important entwined aspect in the development of plural leadership development, the role of leadership styles has also been recognised as a critical facet in the development of relational dynamics that support the emergence of team learning (Edmondson 1999).

3.7.1 Transformational Leadership and Team Learning Behaviours

Results from two meta-analysis conducted by Burke et al. (2006) and Koeslag-Kreunen et al. (2018) clearly indicated that person-focused, empowering and transformational leadership behaviours accounted for significant variance in team learning. Concurrently, other scholars have concluded that participative leadership styles are more effective at encouraging team learning behaviours than directive ones (Dionne et al. 2010; Sarin & McDermott 2003; Zaccaro, Rittman, & Marks 2001). Several researchers have also explored the effects of transformational leadership which they saw as possibly having a positive impact on learning processes that take place in groups. Their rational for the potential impact of transformational leadership on team learning was expressed through the dimensions and behavioural components that form the foundation of Avolio and Bass’s (1995) original construct. Here transformational leadership includes components such as intellectual stimulation, inspirational communication, supportive leadership and personal recognition. Some of these dimensions have the potential to support team learning behaviours; for example, intellectual stimulation may be conducive in instigating change in team members by encouraging them to question conventions and engage through job related learning. In addition, supportive leadership can facilitate a sense of freedom and safety so that team members are more likely to take risks and are exploratory in their learning and development of ideas. In general, these hypothesised relationships have shown that team learning can be fostered through the transformational leadership style of the team leader.

Various studies have illustrated that leaders who exhibit transformational leadership behaviours elicit greater innovation (Boerner, Eisenbeiss & Griersse 2007; Jung 2001; Keller 2006), creativity (Politis 2004; Shin & Zhou 2003,2007), information seeking (Madzar 2001) and knowledge sharing (Adams 2016; Chen & Barnes, 2006) within teams. While these constructs
complement different aspects of team learning, there are, at the same time, a small number of studies that have specifically explored the transformational and team learning phenomenon.

These four studies have explored the impact of transformational leadership in a variety of different teams and organisational contexts. This diversity has included teaching, nursing, research and development and manufacturing teams in conjunctions with groups working in a variety of Taiwanese companies and investment holdings. Two of the four studies have explored the direct effects of transformational leadership behaviours on team learning processes in teams. The first analysis explored the impact of transformational leadership on learning in teams at an individual level. Findings demonstrated that two dimensions of transformational leadership behaviours (idealised influence behaviour and individualised consideration) significantly predicted job-related learning, while the remaining three dimensions did not (Loon et al. 2012). The second paper explored the extent to which transformational leadership behaviours were associated with team learning in teams of vocational education and training teachers. Results of this research established positive direct associations between transformational learning behaviours and two learning activities (information acquisition and information processing). These findings implied that “the more teachers perceived the leadership style of their team leaders to be transformational, the more teachers reported engaging individually in information acquisition and engaging as a team in information processing” (Bouwmans et al. 2017, p.76).

The work undertaken by Bouwmans et al. (2017) also explored how the association between transformational leadership behaviours was mediated by participative decision making, team-oriented attitudes (such as a team member affective commitment and perceived task interdependence) and proactive team-oriented behaviours. Transformational leadership was found to have a positive association with participative decision making which, in turn, was positively linked with both team-oriented attitudes (affective team commitment and perceived task interdependence). These findings supported the authors assumptions that transformational leadership empowered team members with the opportunity to participate in team decision-making which in turn increased teachers’ team-oriented attitudes. Furthermore, these team-oriented attitudes were positively associated with team-oriented behaviours in the form of team proactivity. Consequently, the authors concluded that all indirect paths from transformational leadership through participative team decision making were significantly associated with team learning behaviours.

Other researchers have also highlighted the differentiated impact of transformational leadership on various attitudes and behaviours relating to team learning. For example, results
published by Chiu, Lin & Chien (2009) have emphasised that transformational leadership was positively related to both team learning orientation and team learning behaviours. The authors concluded that transformational leadership was critical in developing a team learning climate and team learning actions. Finally, results of a cross-sectional study conducted by Raes et al. (2013) investigated how nursing teams engaged in team learning behaviours. Their conclusions illustrated that transformational leadership had an indirect relationship with team learning via team psychological safety so that transformational leaders set the conditions in teams for learning to occur.

Collectively, these research findings have confirmed and reinforced the concept that team leaders play a central role in enabling team learning. Furthermore, it is apparent that transformational and empowering leadership behaviours are important person-focused approaches that have been shown to have direct and positive effects on several proximal constructs that support team learning processes (such as innovation and knowledge sharing). At the same time there is limited but growing evidence that transformational leadership can have a significant, direct and positive effect to team learning outcomes (Bouwmans et al. 2017; Loon et al. 2012). But there is also much to indicate that these relationships are complex and are more likely to be expressed through moderating or mediating variables that include affective team processes such as psychological safety or affective commitment and team-oriented behaviours like team proactivity. Together these studies have provided preliminary evidence to indicate that transformational leadership behaviours have positive effects on team conditions that support team learning and more directly on the team learning processes. However, more research is needed to understand the underlying mechanisms and components affecting the transformational-team learning phenomenon.

3.7.2 Plural Leadership and Team Learning Behaviours

To date the focus of this discussion and research has been mainly on what an individual team leader can do, through his/her behaviours to enhance the conditions in teams to facilitate team learning. While team leaders are important enablers, what is also needed is a greater understanding of how team learning is related to the emergence of collective team level leadership capacity. For example, some authors such as Pearce (2004) have viewed transformational leadership as increasingly conceptualised and operationalised as a team-level phenomenon. Shared transformational leadership is regarded as a particularly efficacious response to the needs of knowledge work and team learning as team members lead each other through their intellectual contributions.
Research that explores the interconnection between plural leadership and team learning is rare, however, there are several scholars who have explored the impact of proximal and associated constructs. These include Solansky (2008) who in a study of both vertical and shared leadership patterns in teams concluded that “teams in this study with shared leadership enjoy motivational, social, and cognitive advantages over the teams led by a single individual” (p. 338). Some of those advantages included a stronger sense of competency (efficacy) and improved transactive memory systems amongst team members when leadership was shared. Other pieces of research were undertaken by Hoch (2013, 2014) who found further support for the positive relationship between shared leadership and factors relating to team learning. One group of research results suggested that information sharing was enhanced when shared leadership was high; this was hypothesised to lead to a better use of team members’ knowledge and information (Hoch 2014). In addition, shared leadership was also found to play a role in supporting team innovation and thus facilitating a team’s ability to adapt to change (Hoch 2013).

Finally, three important bodies of research have specifically linked shared leadership with both team and individual learning behaviours. These studies explore the dynamics of leadership and learning within a variety of different types of teams. They included 66 groups of executive MBA students (Wang et al. 2017), 50 teams found in technology companies from China (Liu et al. 2014) and 35 work teams from small to medium business enterprises in Taiwan (Huang 2013). These studies had developed hypothesised research frameworks that include team learning as a dependent variable. The models anticipated that shared leadership fostered team learning either directly (Wang et al. 2017) or indirectly (Huang 2013; Liu et al. 2014). Results demonstrated that the relationship between shared leadership and team learning behaviour were complicated and reciprocal.

Each study measured shared leadership in a very different way. The work undertaken by Huang (2013) used an aggregate individual-team method in which respondents were asked to assess other team members by using eight items from an instrument developed by Wood and Fields (2007). Alternatively, both Liu et al. (2014) and Wang et al. (2017), selected a social network approach developed by Mayo, Meindl, and Pastor, (2003). They asked team members: “To what degree does your team rely on this individual for leadership?”. With all team members rating each of their colleague’s leadership influence the density of those relationships with each team was used to calculate the extent of shared leadership in each team.

Results from these studies were consistent in that shared leadership was positively related to team learning behaviours. In the research findings outlined by Liu et al. (2014) shared
leadership impacted team learning by creating psychologically safe environments that encourage team members to seek new information and knowledge. Alternatively, Huang (2013) reported that the relationship between shared leadership and team learning was partially mediated by knowledge sharing. Furthermore Wang et al. (2017) also found that shared leadership had a positive linear relationship with team learning behaviours at the start of each project cycle, but that relationship diminished as the project tasks progressed.

In addition to these discoveries around shared leadership, there is also a growing body of empirical research that has demonstrated a positive effect between transformational leadership and team learning behaviours (Bouwmans et al. 2017; Bucic, Robinson & Ramburuth 2010; Chi & Huang 2014; Chiu, Lin & Chien 2009; Peltokorpi & Hasu 2015; Raes et al. 2012). A potentially productive aspect of enquiry may be found in the fusion of specific dimensions of transformational leadership viewed as collective emergent influence behaviours in teams. As a “new genre” leadership practice, shared transformational leadership has a broad research foundation, the details of which have been outlined in earlier chapters. The sharing, distribution and reciprocity of influence behaviours that focus on inspirational communication, intellectual stimulation, personal recognition and supportive leadership in teams has the potential to positively impact team learning behaviours. Together these dimensions provide an opportunity to better understand the mechanisms that can facilitate and promote team learning.

Therefore, it is hypothesised that plural forms of transformational leadership in teams are positively related to team learning behaviours (H2).

3.8 Plural Transformational Leadership and Direction, Alignment and Commitment

If leadership is understood as a fluid and emergent outcome of group activities, then it is important to be able to clearly differentiate leadership activities from other group outcomes or processes. Patterns of collective leadership interactions appear to reside along a continuum. Two of the more holistic examples include variants of collective, intentional joint plural action. The first of these is characterised by the dynamic transfer of leadership functions between group members as new situations arise. The second involves the simultaneous sharing of leadership roles. These two forms of joint leadership are described in different ways within the collective leadership literature.

There are few clear definitions of the roles and functions of leaders in the distributed leadership literature. Those that do exist include distributed leadership being described as “the active distribution of leadership authority and agency” (Harris et al. 2007, p. 339) or as “a status ascribed to one individual, an aggregate of separate individuals, or sets of small numbers of
individuals acting in concert” (Gronn 2002a, p. 428). These definitions seem to be more in keeping with the traditional leader-follower, vertical and leader centric notions of influence and they do not assist in explaining exactly what happens as an outcome of leadership activities. In contrast Bennett et al. (2003) provide a very broad ranging conceptualisation of Distributed Leadership which they describe as “an analytical orientation to leadership, which leaves open - in fact, requires - choices and priorities to be made concerning its operation, which create varying tangible types and forms of distributed leadership” (Bennett et al. 2003, p. 8).

Alternatively, some shared leadership scholars have specifically described collective leadership through the realisation of important and worthwhile outcomes for the group. For example, shared leadership is defined by Pearce and Conger (2003) “as a dynamic, interactive influence process, among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both” (Pearce & Conger 2003, p.1). On the other hand, Carson (2005) describes shared leadership as a group phenomenon which “represents a social process involving influence exhibited by many group members in the shaping of group tasks, motivation of group members, and stimulation of change and growth” (Carson 2005, p. 3). The notion of mutual and reciprocal influence is central to many of the definitions and descriptions of shared leadership and distinguish it from other team outcomes and processes such as empowerment, participative decision making and various forms of team cognition (Carson 2005; Carson, Tesluk & Marrone 2007).

These definitions and descriptions share an understanding of leadership as a social process in which individuals work together toward fulfilling collective outcomes. Therefore, groups who succeed in achieving group goals or realising values for the group are in effect demonstrating collective leadership. This axiomatic relationship between specific group outcomes and collective leadership is described in more detail by Drath et al. (2008). His explanation of a new leadership ontology provides a pragmatic and functionalist perspective of collective leadership as an outcome of individual and shared leadership beliefs and practices within groups. They consider collective leadership practices from the practical outcomes that are created at a group level, when people participate in shared work. From Drath et al.'s. (2008) perspective, the practice of team leadership necessitates the production of direction, alignment and commitment (DAC).

The first of these leadership outcomes focuses on shared direction, the widespread collective agreement within a group, regarding the group’s aim, mission and vision of their shared work. Group members know, understand and concur to the value of the group’s direction and aim (Drath et al. 2008) and understand “what they are doing, why they are doing it, and how they
will do it” (Drath 2001, p. 20). The second outcome is defined as the organisation and coordination of knowledge and work. In a small functioning group or team this is “produced through mutual adjustments in face-to-face conditions” (Drath et al. 2008, p. 647). If alignment has been created, then the work of individuals within a group or across a collective is generally consistent with the work of other individuals within the group or across different parts of the organisation. In brief, alignment means effective coordination and collaboration (Eckert & Drath 2009). Finally, the term commitment refers to the willingness of individuals to subsume their own interests, efforts and any potential personal benefits and incorporate these in the service of the common good (Eckert & Drath 2009). Commitment then is related to developing cohesion, coordination and investment and maintaining a duty to the group, especially during those times of change and tension (Drath 2001).

Thinking of leadership in terms of outcomes means that wherever and whenever a group demonstrates DAC then leadership has been enacted and exists. It is the presence of these three outcomes that marks leadership (Drath et al. 2008; Eckert & Drath 2009). Leadership is regarded as an ensemble, primarily because the evolution of direction, alignment and commitment are social and relational in nature and because leadership is the achievement of whole groups and teams. “If direction is to be shared, everyone must understand and accept it; if alignment is to produce coordination and collaboration, everyone must be prepared to interact collaboratively with others; if there is to be commitment, everyone must put the good of the shared work above individual good” (Eckert & Drath 2009, p. 24). These three leadership outcomes are independent as they can be produced on their own and with separate and varying degrees of effectiveness. However, the overall criterion for the success and effectiveness of collective leadership is assumed to be the extent to which all three elements of direction, alignment and commitment are produced and furthermore how they function together as a composite (Drath et al. 2008).

While the DAC model has some evidence of success in practice (McCauley et al. 2008) there is a dearth of empirical research evidence to support the framework. Using the input-process-output framework, DAC can be viewed as a performance output that is contingent upon leadership practices (Drath et al 2008). While there is a lack of evidence that illustrates the impact of leadership practices on DAC outcomes, there is some empirical research that supports the positive relationship between commitment and direction as consequences of leadership processes. For example, Chen et al. (2011) established that empowering leadership in teams significantly and positively predicted affective commitment, while Arnold, Barling and Kelloway (2001) showed that transformational leadership positively impacted team commitment.
While there has been a lack of research on transformational leadership in teams and even fewer studies on shared transformational leadership, it is reasonable to assume that the relationships found in studies of vertical leadership will hold in the case of shared leadership in teams (Boies, Lvina & Martens 2010; Burke et al. 2006; Pearce & Sims 2002). Therefore, it is likely that when transformational behaviours such as individualised consideration and intellectual stimulation are shared among team members these will play a role in establishing a compelling direction. In addition, the work of Arnold, Barling and Kelloway (2001) suggests that the more team members display transformational leadership behaviours then the greater commitment will be experienced in the team. Finally, when team members share responsibility for their work and influence one another through transformational exchanges, it is likely that this will serve as a basis for alignment within the team. The goal of this research is to explore how the collective practice of transformational leadership in teams helps frame DAC as outcomes of team processes.

Consequently, it is hypothesised that plural forms of transformational leadership are positively related to direction, alignment and commitment in teams (H3).

3.9 Plural Leadership in Teams and Thriving at Work

In an early analysis of team leadership Zaccaro, Rittman and Marks (2001) hypothesised that leadership had an important role to play in enabling positive attitudes, behavioural and cognitive processes. In developing a functional framework for thinking about leadership effects on team performance Zaccaro and Klimoski (2002) proposed that the dynamics of team leadership illustrated a contextual condition that shaped team affect, mood and emotions. While different scholars have recognised that affect, mood and emotion play a major role in teams, it has been more common for researchers to address them as components of behavioural episodes such as cohesion and conflict (Kozlowski & Ilgen 2006). Research around collective affect, mood and emotions in work teams is in its infancy with several authors recommending investigation into the relationship between leadership and emergent affective states (Burke et al. 2006; Kozlowski & Ilgen 2006).

Using an input-mediator-output model (Ilgen et al. 2005), one of the contextual inputs and resources that enable both high quality connections and positive affective outcomes is shared leadership (Wang, Waldman & Zhang 2014). The increased attention to shared leadership is embedded in the knowledge that it provides greater participation, information sharing and positive affective tone (Hmieleski, Cole & Baron 2012; Hoch 2014; Huang 2013). Research has illustrated that teams that developed a pattern of shared leadership behaviour experienced
significantly better intermediate affective team processes and emergent states. These included
greater team cohesion (Avolio et al. 1996; Balthazard et al. 2004; Bergman et al. 2012; Neubert
1999) and potency (Boies, Lvina & Martens 2010), along with higher levels of organisational
citizenship behaviours (Khasawneh 2011), efficacy (Avolio et al. 1996; Solansky 2008), team
psychological safety (Liu et al. 2004) and trust (Bergman et al. 2012; Boies, Lvina & Martens
2010). Higher levels of shared leadership have also been associated with lower levels of conflict
and job stress (Wood & Fields 2007). Shared transformational leadership in teams has similarly
been found to be positively correlated with affective dimensions such as satisfaction, extra
effort, trust and cohesion (Avolio et al. 1996; Balthazard et al. 2004; Sivasubramaniam et al.
2002). Current organisational and team research has also described several other powerful
processes and emergent affective states which researchers can employ for similar investigations
(Burke et al. 2006; Mathieu et al. 2017; Zaccaro, Rittman & Marks 2001). Given this research has
focused on specific affective bonds that develop over time between individuals and across
groups, these affective states and processes are likely to play important roles.

One important construct in this domain is thriving. Research has shown that thriving is a crucial
mechanism for enabling higher levels of task and team performance (Keister 2013; Porath,
Spreitzer & Gibson 2008), self-development (Paterson, Luthans & Jueng 2014), greater
organisational citizenship behaviours (Porath, Spreitzer & Gibson 2007) and change adaptability,
novation and creativity (Carmeli & Spreitzer 2009; Keister 2013). At the same time, thriving
has also been linked to healthier lifestyle behaviours (Spreitzer, Cobb, & Stevens, 2007), to
improved well-being (Shirom et al. 2008), psychological capital, work engagement (Kleine,
Rudolph & Zacher 2019) and reduced burnout and strain (Milosevic, Bass, & Paterson 2013;
Porath et al. 2012; Spreitzer, Porath & Gibson 2012). The importance of thriving at work is
reiterated by Walumbwa et al. (2018) who concluded that “thriving is an important means by
which managers and their organisations can improve employee’s positive health and unit
performance” (Walumbwa et al. 2018, p. 249). Furthermore, results of a large meta-analysis of
73 independent research samples, conducted by Kleine, Rudolph and Zacher (2019), found
thriving at work to be positively related to various important work outcomes. These included
employee health, favourable job attitudes and positive performance related criteria. Research
has also taken place in a school context (Orlowski 2018); a result of this study has emphasised
the importance of thriving amongst teachers with higher scores of vitality and learning being
associated with a greater possibility of staff remaining in the profession and in their current
school. Consequently, although research in this area is in its infancy, it is likely that thriving is a
construct that assists not just individuals but also their teams and organizations in reaching
sustainable performance outcomes (Walumbwa et al. 2018). Furthermore, there is the potential
for thriving at work to integrate with other key issues and tenants in the field of team leadership and team research.

Thriving is viewed within a work context. It has relevance to teams because researchers want to understand the psychological state that is most influenced by the context of work. Researchers view thriving as a subjective experience and a psychological state that is affected by social and relational surroundings at work (Liu & Bern-Klug 2013). It is not seen as a disposition or internal characteristic but rather it is conceptualised as a “temporary internal property” (Spietzer et al. 2005, p.538). Thriving is defined as “the psychological state in which individuals experience both a sense of vitality and a sense of learning at work” (Spietzer et al. 2005, p.538). Thriving at work is conceptually supported by the joint experiences of learning and vitality. These provide both an affective (vitality) and a cognitive (learning) component. The former refers to the subjective experiences of energy and liveliness (Niessen, Sonnentag & Sach 2012) while the later distinguishes the acquisition and application of new knowledge and skills (Paterson, Luthans & Jeung 2014).

Conceptually, some of the tenants of thriving, particularly vitality, strongly intersect with several constructs within the area of positive organisational scholarship. For example, vitality closely aligns with the concept of intrinsic motivation (Carmeli & Spreitzer 2009), resilience, flow, flourishing and subjective well-being (Carmeli & Spreitzer, 2009; Spreitzer et al. 2005). While these concepts are like thriving, it is possible, to experience flow, to flourish and be intrinsically motivated without learning. Thriving is distinct from these other concepts because it highlights the positive experience of human growth, reflected by the practice of both vitality and learning.

The combination of both vitality and learning are fundamental to the construct, “Just experiencing learning or vitality by itself is not enough. When experienced simultaneously, the learning and vitality components of thriving help sustain performance” (Spreitzer, Porath & Gibson 2012, p. 156). Together the two dimensions are viewed as reflecting self-regulation in the workplace and providing an adaptive function by helping individuals adjust and promote personal growth and development (Wallace et al. 2013).

Spreitzer et al. (2005) indicated that “the engine” that drives thriving are the purposeful agentic work behaviours of employees. The three purposeful actions that increase the likelihood of thriving include being task focused, having a sense of exploration and “heedfully relating” to colleagues. Being task focused and having a sense of exploration both lead to interest, learning and achievement (Boyd 2015). At the same time, when being heedful in their relationships with
others, employees actively engage with peers in a collective and collaborative manner and in that process, acquire new skills, knowledge and abilities (Boyd 2015).

Various scholars emphasise that these “thriving-enabling agentic drivers” (Jiang 2017, p. 87) are largely shaped by individual proactivity and people’s relational connections with one another (Carmeli & Spreitzer 2009). For Spreitzer et al. (2005) thriving at work is socially embedded and the experience is related to three characteristics of the social environment. These include: the amount of discretion the individual has in relation to making decisions at work; the extent to which there is broad information sharing in the organisation; and the level of respect and trust between staff members. These enablers support the two aspects of thriving in different ways. For example, decision-making discretion allows a greater sense of control and choice about what to do at work and how to do it. Consequently, people may feel energised when they have choices and the resulting autonomy creates opportunities for learning (Porath et al. 2012). In addition, having information shared within groups supports thriving because it helps employees understand how they can contribute, integrate and coordinate their actions (Spreitzer, Porath & Gibson 2012). Finally, a positive respectful climate imbued with trusting relationships may stimulate employees to participate and contribute further to their colleagues and their group (Liu & Bern-Klug 2013). This increased connectivity can enable individuals to learn from acquiring and using new skills. At the same time the provision of support to others often increases both affective and psychological energy (Carmeli & Spreitzer 2009).

Research has recognised the important role leaders and supervisors play in enabling these agentic work behaviours. Being connected with others at work through good work relationships is an important relational resource for thriving (Niessen, Sonnentag & Sach 2012). The quality of the relationship between supervisors and co-workers has been shown by Atwater and Carmeli (2009) and Xu and Wang (2019) to be positively associated with the experience of vitality. Empirical evidence has also demonstrated that high quality connections between leaders and employees facilitate agentic work behaviours (Paterson, Luthans & Jeung 2014) and that leadership is an important enabler of employee thriving at an individual level (Hildenbrand, Sacramento & Binnewies 2018; Jaiswal & Dhar 2017; Paterson, Luthans & Jeung 2014). This relationship is also supported by the work of Kleine, Rudolph and Zacher (2019) who, in a meta-analysis of 21,739 respondents, reviewed various antecedents and found that strong associations were evident between thriving and positive leader member exchanges and perceived organisational support. Thriving has also been found to be particularly important for the effectiveness of a leader. In an analysis of both undergraduate and post-graduate students along with professionals from a wide diversity of industry types, Porath et al. (2012) discovered
that leaders who exhibited thriving were rated by employees as being significantly more effective in their leadership role than those who demonstrated lower levels of thriving.

These results are supported by other studies around positive psychology with several scholars finding a significant affect between positive supervisory behaviours and employee well-being (Gilbreath & Benson 2004). Furthermore, a small body of empirical research has also shown a link between leadership styles and employee well-being. Some of these studies have specifically examined the relationship between transformational leadership and well-being (Arnold et al. 2007; Nielsen & Daniels 2012; Skakon et al. 2010). In general, results have reported that transformational leadership was positively related to affective well-being (Nielsen & Daniels 2012) and negatively related to feelings of stress. However, these relationships were sometimes mediated by “psychological mechanisms” in the form of team and self-efficacy (Nielsen et al. 2009). Authors also argue that transformational leadership in particular “can be regarded as a contextual facilitator of thriving” as it “influences the pool of resources that employees have available, aiding the development of thriving as a volatile, personal resource” (Hildenbrand, Sacramento & Binnewies 2018, p. 33). Research results supported the notion that enhancing transformational behaviours in organisations should increase employees’ vitality and learning because “thriving as characterized by learning and vitality is among the mechanisms through which transformational leadership exerts its influence” (Hildenbrand, Sacramento & Binnewies 2018, p. 38). The relationship between transformational leadership style and individual thriving has also been investigated by Niessen et al. (2017) in school environments. Results from 277 teachers in 112 different schools illustrated that the perceived transformational leadership style of the principal was associated with an increase in thriving. But this positive relationship only existed during periods when teachers were experiencing “very low levels of emotional exhaustion” (Niessen et al. 2017, p. 49). Conversely, when moderate to high levels of emotional fatigue prevailed, the reverse effect occurred. In other words, when teachers were emotionally exhausted, perceived transformational leadership was associated with decreased thriving. These results indicated that context plays an important role in the association between leadership and thriving; any advantages associated with transformational leadership can only be utilised for developing personal vitality and learning when individual participants have sufficient energy resources.

More recently, two scholars have also demonstrated that leadership is an important factor in facilitating thriving at a group, rather than an individual, level with leaders’ behaviours enabling collective team learning and vitality (Walumbwa et al. 2018; Xu & Wang 2019). In these studies, individual team members were asked to rate their level of thriving at work using Porath’s et al.
In both bodies of work the authors obtained collective thriving scores by aggregating individual responses within a team. Accentuating thriving at a group level strongly aligns with Spreitzer and Porath, (2014), Spreitzer, Porath and Gibson (2012), and Spreitzer et al. (2005) who have all emphasised that learning, and vitality do not happen solely in individuals’ minds but, instead, arise through social interactions and social exchanges. High quality member and leadership relationships in teams were described by Walumbwa et al. (2018) and Xu and Wang (2019) as important factors facilitating teams’ collective thriving. In addition, collective thriving at a team level was itself positively related to collective affective commitment and overall unit performance (Walumbwa et al. 2018; Xu & Wang 2019).

In conclusion, it is apparent that thriving is receiving increasing interest in the areas of organisational behaviour and positive organisational scholarship. While the construct shares the same conceptual space as variables like resilience, well-being, positive effective and proactive personality, it is argued that thriving is distinct in several important ways (Jiang 2017; Walumbwa et al. 2018; Xu & Wang 2019). Despite increased interest in the concept, relatively little is known about the contextual factors that support and promote thriving at work and the consequences of thriving at work. Furthermore, the role of leadership has been understudied in the existing thriving research (Paterson, Luthans & Jeung, 2014). Those bodies of research that have explored the impact of leadership suggest that it is an important contextual enabler of thriving at an individual level (Hildenbrand, Sacramento & Binnewies 2018; Jaiswal & Dhar 2017). There is also an opportunity for scholars to examine the positive implications of thriving at a team, rather than simply an individual, level. This supports the notion that thriving is a socially embedded phenomenon (Spreitzer et al. 2005) that emerges as a shared property at the team level. Two bodies of work, undertaken by Walumbwa et al. (2018) and Xu and Wang (2019) have begun to explore this stream of scholarship and results in both have supported the contention that leadership is an important factor facilitating a team’s collective thriving.

The research findings outlined above suggest that it is reasonable to assume that collective transformational leadership behaviours in teams may act as a favourable context that supports collective thriving. For example, those transformational leadership behaviours that encourage intellectual stimulation can support social environments characterised by both discretionary decision-making and information sharing, along with agentic behaviours that create a sense of exploration. This research will explore these and other potential associations by examining the relationships between the distributed, shared and reciprocal patterns of transformational leadership and the emergence of thriving as an affective state in teams.
Therefore, it is hypothesised that plural forms of transformational leadership are positively related to thriving in teams (H4).

3.10 Thriving at Work and Team Outcomes

Because agentic behaviours produce resources that can fuel both individual and group behaviours, thriving individuals and groups can produce resources endogenously. For example, when people are learning and growing at work, they are in a more favourable position to recognise problems, come up with innovative ideas and new knowledge. In addition, when individuals are experiencing vitality in their work, they are more likely to have the energy and motivation to engage in innovative ideas and develop stronger relationships with colleagues in doing their work. Team learning is viewed as a cycle of activities that teams engage in to process knowledge so that they can adapt and improve (Edmondson 1999; Gibson 2001). Team learning is a dynamic behavioural process of interacting and exchanging ideas between members of the group (Kozlowski & Bell 2008; Kozlowski & Ilgen 2006). Taking a relational approach to team learning suggests that knowledge is acquired when people interact with one another, share their expertise and ideas and find unique ways to integrate these experiences and knowledge (Carmeli & Azeroual 2009). These activities include experimentation, reflection, dialogue and knowledge codification (Gibson & Vermeulen 2003). The repertoire of social, intellectual and psychological resources developed through thriving suggest that it is an important antecedent that positively supports those relational processes that enable team learning.

Therefore, it is hypothesised that thriving is positively related to team learning behaviours (H5).

Finally, when individuals heedfully relate to one another they “act in ways that demonstrate that they understand how their own job fits with the jobs of others to accomplish the goals of the system” (Carmeli & Spreitzer 2009 p. 175). In addition, being heedful in relation to colleagues means that individuals are “more able and likely to help others and provide social support” (Carmeli & Spreitzer 2009 p. 175) which in turn generates greater connectivity between group members. Spreitzer et al. (2005) also noted, that decision-making discretion, broad information sharing, and a climate of trust and respect are all factors that facilitate thriving. Consequently, thriving as a socially embedded psychological state is likely to support leadership as a collective outcome in teams. It is proposed that the production of direction, alignment and commitment (DAC) within the team provides the indication that leadership has been produced and at the same time provides an assessment of leadership effectiveness (McCauley et al. 2008). Context and social and relational interactions are preeminent in this framework.
Therefore, it is hypothesised that thriving is positively related to direction, alignment and commitment in teams (H6).

### 3.11 Modifications to Hypotheses

The relationships expressed in the six-hypothesis listed above were initially examined within a small-scale pilot study. These provided an opportunity to assess the feasibility of the study while also allowing the opportunity to test the adequacy and statistical reliability of research instruments. The quantitative analysis of the relatively unexplored DAC instrument in the pilot study led to modifications in some of the hypotheses mentioned here. Hypothesis three, (H3), was altered to specify a relationship between plural transformational leadership and team commitment and not direction, alignment and commitment (DAC). In addition, the variable DAC was also removed from hypothesis six which was modified as follows: **H6: Thriving is positively related to team commitment.** While the rationale for these changes are explained in the following chapter, it is important to provide a theoretical rationale for the adoption of team commitment as a constituent dependent variable in this research.

Team commitment, while a component of DAC, is also used by researchers as an independent construct that refers to the psychological attachment that group members feel towards their team at work. It is conceptualised as a unique and separate form of work commitment, with employees possibly having simultaneous forms of commitment to their profession, team, organisation, union and job all occurring simultaneously (Bishop et al. 2005; Bishop & Scott 1997). Over time team members may choose to exert fluctuating levels of effort on behalf of their team and their desire to maintain team membership and engagement may vary (Becker 1992). Team commitment is closely aligned with the concept of cohesion. This is defined as a “team members attraction and commitment to their team, team members and the team’s tasks” (LePine et al. 2008 p. 290) with highly cohesive groups often having a high degree of commitment to the group task and group goals (Klein & Mulvey 1995).

Team commitment is a centrepiece of team and team leadership research. Groups evolve into teams once members have developed a sense of shared commitment (Katzenbach & Smith 1993). Team commitment itself is viewed as an important team effectiveness criterion (Cohen & Bailey 1997; Johnson, Korsgaard & Sapienza 2002) and described as either an attitudinal or motivational outcome or emergent state (Cohen & Bailey 1997; Kozlowski 2018; Mathieu et al. 2008; Wang, Waldman & Zhang 2014). Alternatively, other authors such as Friedrich et al. (2009) and Ilgen et al. (2005) have viewed team commitment as a component of the interactional and bonding processes inherent to the functioning of teams.
Previous research suggests that there are several positive team outcomes related to group members levels of commitment to their work team. These include team performance and altruism (Neininger et al. 2010), job performance, team productivity, team and organisational citizenship behaviours (Bishop, Scott & Burroughs 2000; Bishop & Scott 1997; Pearce & Herbik 2004). These findings advocate for a greater understanding of the antecedents of team commitment which is seen as an important area of research. Literature dealing with team commitment has identified several antecedents to commitment in the workplace that are related to employees’ tasks, roles and relationships. Team commitment researchers propose that it may be possible to facilitate employees’ level of commitment by addressing specific antecedent variables like: task interdependence, interceding role conflict, resource-related role conflict, satisfaction with co-workers, trust, perceived team support, empowerment and teamwork behaviours (Bishop, Scott & Burroughs 2000; Bishop & Scott 1996; Kirkman & Rosen 1999; Park, Henkin & Egley 2005; Schlechter & Strauss 2008; Sheng, Tian & Chen 2010). Some authors have suggested that satisfaction with leadership and team leadership behaviours also play an important part in enabling team commitment (Bishop & Scott 1996; Cohen & Bailey 1997; Mathieu et al. 2008; Morgeson, DeRue & Karam 2010; Sivunen 2006; Yammarino et al. 2012). Team commitment is described as one of the “soft” criteria used to measure the effectiveness of team leadership (Yammarino et al. 2012) and research has shown that transformational leadership behaviours have a particularly efficacious role in enabling both organisational and team commitment outcomes (Bass et al. 2003; Lehmann-Willenbrock 2015; Lim & Ployhart 2004; Podsakoff, MacKenzie & Bommer 1996; Schlechter & Strauss 2008; Strauss, Griffin & Rafferty 2009). In addition, Arnold, Baring and Kelloway (2001) have demonstrated that a culture of transformational leadership within a team, where the team members display transformational leadership behaviours, positively impacts team commitment. Empirical research and literature in plural leadership has also illustrated that commitment to the team and shared leadership are significantly and positively correlated (Somboonpakorn 2011; Wang, Waldman & Zhang 2014; Wu & Chen 2018). Team commitment is viewed as both a facilitator of shared leadership (Bligh, Pearce & Kohles 2006; Day, Gronn & Salas 2004; Denis, Langley & Sergi 2012; Ishikawa 2012; Wang, Waldman & Zhang 2014) and as an affective outcome or emergent process that evolves from shared leadership behaviours in teams (Carson, Tesluk & Marrone 2007; D’Innocenzo, Mathieu & Kukenberger 2016; Enslay, Pearson & Pearce 2003; Galli et al. 2017; Hoch & Kozlowski 2014; Katz & Kahn 1978; Kozlowski & Ilgen 2006; Liu et al. 2014; Nicolaides et al. 2014; Novikov 2016; Pearce, Manz & Sims 2008; Pearce & Sims 2000; Perry, Pearce & Sims 1999; Slantcheva-Durst 2014; Small & Rentsch 2010).
A synthesis of this research suggests that when team members positively influence one another through their collective expression of transformational leadership behaviours, it is likely to serve as a basis for team commitment. Consequently, the numerous threads of empirical evidence in team, team leadership, transformational and shared leadership research support the contention that plural forms of transformational leadership will be positively related to team commitment (Modified H3).

This research has also explored the relationship between thriving in teams and team commitment. Thriving is described as a psychological experience of growth in a positive capacity (Spreitzer & Porath 2013). Because of the generative nature of thriving it is reasonable to assume that a variety of individual and team level outcomes can be generated once thriving is established. However, while thriving at work has been hypothesised to “predict an impressive range of outcomes for people and organizations” (Spreitzer & Porath 2014, p. 255) there is a dearth of empirical work that examines these relationships at a team level. Thriving has been found to be associated with better individual task performance, greater organisational citizenship behaviours, less employee job strain and burnout, enhanced leadership effectiveness and improved commitment to organisations (Porath et al. 2011; Spreitzer & Porath 2013). While there is a lack of empirical evidence specifically addressing the relationship between thriving, team processes and outcomes, other work in associated areas of positive organisational scholarship (POS) provides some suggestion as to the direction of those relationships. For example, a study conducted by West, Patera & Carsten (2009) within the area of POS demonstrated that teams with higher levels of positive organisational behaviours reported higher levels of cohesion. Specifically, the combination of team optimism, efficacy and resilience explained a significant amount of variance in cohesion within teams. In accordance with these findings and in alignment with the existing empirical research around thriving, it is anticipated that thriving is positively related to team commitment (Modified H6).

A quantitative exploration of the strength and association between the various independent and dependent variables outlined in each of the hypothesis above, is described within the following chapters.
4 Methodology

The purpose of this section is to outline key elements of both the pilot study and the main body of research undertaken as part of this investigation. The two samples are described in detail, along with the various measures used in the tests of the six hypotheses outlined in Chapter Three. This section provides background and an entrée into the illustration and description of key findings outlined in the following chapter.

4.1 Samples and Procedures

This research has focuses on the dynamics of plural leadership within school teams. Several themes provide justification for the exploration of these dynamics in the school environment. Schools are “rife with team activity” (Senge et al. 2012, p. 2450); teams are abundant and central to the work and operation of schools (Nellis 2012). The increasing popularity of team based organisational structures in school management reflects the evolving complexity of life and work in schools (Duignan & Bezzina 2006), the ongoing intrusion of technological and societal change (Beachum, McCray & Huang 2010) and the “multi-dimensional and often conflicting reforms” (Witziers, Sleegers & Imants 1999, p. 293) in education. Consequently, school environments are described as “social complex adaptive” (Fidan & Balci, p. 11), “self-organizing”, “non-linear” systems (Morrison 2002, p. 55).

The amplified complexity, diversity and dynamic state of change for academic staff has seen a shift from leader centred models of leadership to team centred leadership (Barnett & McCormick 2012), so that “shared leadership is interlinked with the dynamics of teamwork in schools” (Lightbody 2010, p. 34). The situational distribution of leadership through team structures has played a crucial role in implementing innovation and embedding strategic and educational change (Bouwmans et al. 2017; Scribner et al. 2007). These initiatives and changes are dependent, in part, on team performance and it is only when teams change the way they work that effective change can be achieved at the organisational level in schools (Bouwmans et al. 2007). Plural leadership through teams also has a practical dimension (Bezzina, 2007; Hall 2001; Lightbody 2010; Wilhelm 2017); this is partly engendered by the realisation that school principals alone can no longer meet the extreme demands, heightened accountability and requirement for ongoing reforms (Beachum, McCray & Huang 2010; Lambert 2002; Lightbody 2010).

At the same time, researchers have found that plural leadership practices and team structures in schools have been associated with better organisational performance (Lambert, 2006), positive working relationships among teachers (Louis et al. 2010) and increased teacher
commitment (Park, Henkin & Egley 2005; Pounder 1999; Wallace 2001). Several authors have emphasised the significant positive, indirect effects of plural leadership practices on student learning and achievement (Louis et al 2010; Vangrieken et al. 2015) and the importance for both teams and collective leadership to facilitate the professional growth and development of teachers (Duignan & Bezzina 2006; Leithwood, Steinbach & Ryan 1997; Lightbody 2010; Senge et al. 2012; Silins & Mulford 2002). The sharing of leadership responsibilities and the development of learning and leadership capacity within teams can reinvigorate schools and embed school improvement (Park, Henkin & Egley 2005). Some authors have stressed the importance of both these aspects by suggesting that “education teams hold the potential to ‘rebuild’ schools” (Pounder 1999, p. 139) and “as shared leadership becomes a norm for all schools, student outcomes will improve dramatically” (Wilhelm 2010, p38).

The concomitant goals of enabling greater integration of teamwork and pluralist leadership in Australian schools have been emphasised and reinforced by various State Education systems and authorities. These groups have endeavoured to pursue reforms and facilitate strategies that promote improved effectiveness and educational outcomes within the Australian schools’ system. The associations and State Departments emphasise that school teams and plural leadership are essential to improving the quality of teaching, learning and enhanced efficiency. Examples include various digitally based strategic foundations promoted by State Education Departments in both Queensland and Victoria. These online resources direct attention to the need for the development and maintenance of effective teaching teams and the facilitation of plural leadership to enable “high impact improvement initiatives” (Queensland Government: Department of Education 2019; Victorian State Government: Education and Training 2019).

While these frameworks and the associated literature and research emphasise the increasing importance of plural leadership and team structures in schools, “there remains ongoing caution and doubt about the use and effectiveness of teams in schools” (Nellis 2012, p.245). In addition, many schools are “still struggling to realize the potential advantages of school wide teamwork” (Deal, Purinton & Waetjen 2009, p.8) and there is relatively little knowledge about how these teams work; in particular, “we lack clarity in understanding the interactional processes that influence relative team outcomes” in schools (Scribner et al. 2007, p. 72). This research endeavours to constructively contribute to understanding these interactional processes and support the integration and ongoing development of team structures and plural leadership within schools.

The pilot study analysed information from questionnaire responses distributed to staff in a large independent school in Perth, Western Australia. Having received appropriate ethics approval
(Appendix E) and permissions from the Headmaster, an online questionnaire was developed in Qualtrics and this, in conjunction with a specific Participant Information Form (Appendix F), were disseminated to 196 staff members in May 2015. A total of 163 questionnaires were returned. These constituted 34 different teams with a comprehensive set of statistics collected for 28 teams from 144 staff who were distributed in one of the following functional groups: Academic departments (60%); Middle management (21%); Executive (7%); Year Groups (7%) and; Interdisciplinary teams (4%). Respondents had been members of their teams for an average of five years (SD=2.10) and teams typically contained seven people (SD=2.43), who were predominantly male (69%).

While the pilot study focused on collecting data from a professional community within one organisation, the main study concentrated on surveying schools across all states of Australia. Data was collected between August 2014 and March 2017 and during that time a total of 102 Principals were contacted with an invitation for their professional communities to participate (Appendix G). Upon receiving permission from Principals, information was then requested about the various working teams in each school, specific details about member composition and the contact details of individual team members. Consent was granted to distribute questionnaires and Participant Information Forms within 25 different schools. To prevent duplication or confusion among respondents within schools, each questionnaire designated a specific team and listed the team members. A total of 428 staff from 113 different teams responded to the questionnaire (Appendix I). Within that sample, 72% of participants completed the questionnaire. Those 307 participants successful constituted a single source of data with their responses being used to analyse relationships between dependent and independent variables at a team level of analysis. A total of 76 complete teams encompassed the final primary data set.

For the purposes of this research the term “team” refers to a group of three or more people who share responsibility in decision making and task completion with the aim of achieving a common outcome (Welch, Brownell & Sheridan 1999). For teams to be eligible for inclusion in this study, they needed to demonstrate the following characteristics: firstly, a team must have constituted an identified group within the organisation; secondly, the team needed to have a clear purpose and, furthermore, it was essential that the intent of the team connected with the mission of the organisation; in addition, the collection of individuals needed to be interdependent and interact face-to-face with one another in accomplishing tasks; finally, because network analysis is sensitive to missing data and requires a high response rate
(Borgatti, Carley & Krackhardt 2006), only teams with a participation rate of 75% (De Brun & McAuliffe 2018) or more were included in this analysis.

The Director of Evaluation and Accountability of the Department of Education granted permission for this research to be conducted in Department sites in Western Australia (Appendix H). Consequently, several Principals at various public schools were approached and invited to participate in this project. However, participation rates were relatively low. While invitations were also sent to a variety of different schools in other states of Australia, complete data were received from only two independent schools in Queensland and one independent school from Tasmania. The final list of teams used for this research were therefore, predominantly from independent schools in Western Australia (88%). In general, respondents were female (62%) and had on average been members of their team for approximately four years (SD=1.94). They worked in teams that were typically comprised of five group members (SD=1.75) and had Executive or Senior Management (24.5%), Middle Management (22.6%) or Academic (16.6%) functions.

4.2 Measures

4.2.1 Transformational Leadership

Transformational leadership behaviours of team members were measured using 12 items from Rafferty and Griffin’s (2004) inventory. This questionnaire, which comprised five sub-dimensions was primarily derived from a range of items developed by House (1998) and Podsakoff et al. (1990). Because this research focused on the distribution of leadership behaviours within teams it was construed that three items that assessed the sub-dimension vision should be excluded from this analysis. Having multifarious visions held by a diversity of team members each promoting a “clear sense of where he/she wants our unit to be in five years” (Rafferty & Griffin 2004, p. 339) was thought to have a negative impact on team performance. If everyone is voicing their own visions, then the team may lose focus and become distracted from its work (Nicolaides et al. 2014). The 12 items that were retained measured four sub-dimensions; inspirational communication, supportive leadership, intellectual stimulation and personal recognition. For example, participants were asked how other team members “challenged me to think about old problems in a new way” (intellectual stimulation), “commend me when I do a better than average task” (personal recognition), “says things that make me proud to be part of this team” (inspirational communication) and “considers my personal feelings before acting” (supportive leadership).

This instrument has been used by a diversity of scholars to assess transformational leadership behaviours of lecturers (Shah, Rahman & Ithnain 2011), managers (Carmeli et al. 2014),
supervisors (Moss 2009; Whitford & Moss 2009), executives (Shao, Feng & Liu 2012) and unit and senior leaders (Strauss, Griffin & Rafferty 2009). The veracity of this instrument has been repeatedly supported with Cronbach Alpha scores between 0.81 and 0.96 being reported by Carmeli et al. (2014) and Strauss, Griffin and Rafferty (2009). These reports reinforced the 0.82 to 0.96 range of Cronbach Alpha reliabilities described by Rafferty and Griffin (2004). Although Rafferty and Griffin’s (2004) initial analysis illustrated that the five leadership sub-dimensions correlate with each other, the authors reported that after controlling for the effects of common method variance, results provided initial support for the five-factor leadership model. Their results advocated the possibility of examining individual leadership subdimensions as opposed to one higher-order transformational leadership factor. Further testing confirming the authenticity of the sub-dimensions and the reliability of the scales used in this instrument were undertaken in both the pilot study and the main body of research. These findings are reported in the next chapter.

While shared transformational leadership behaviours were measured using 12 items from Rafferty and Griffin’s (2004) instrument, results were analysed using social network analysis (SNA). The use of SNA facilitated an assessment of the patterns of leadership behaviours and relationships by quantitatively examining three network properties, density (sharedness), decentralisation (distribution) and reciprocity (mutuality). Each of these are network measures and can be viewed as a unique aspect of a team’s plural leadership dynamics.

In SNA the unit of analysis is always the link (ties) between actors (team members). In the case of this research a focus is on how many transformational leadership ties exist between team members. This “inclusiveness” (Scott 2017) or “sharedness” (Mendez 2009) of leadership can be measured using network density. This identifies the number of ties in the network in proportion to the total number of possible ties (Hanneman & Riddle, 2005; Borgatti, Everett & Johnson 2013). Therefore, density reflects the overall quantity of leadership in the team and is analogous to the mean number of ties per group member (Wasserman & Faust 2009). The more leadership ties each group member has with other group members then the greater the density within the network. Density measures lie between 0 and 1 with higher numbers indicating a greater overall level of leadership interactions or “sharedness” between actors.

Because network density indicates only the average tendency within a team, network centralization is used to measure the distribution of leadership influence. Centralization reflects the extent to which interactions are concentrated in a small number of individuals rather than distributed equally among all members of the team. Consequently, this is a measure of variability or spread of leadership ties, ranging from an even distribution (n=0) to a skewed one.
(n=1) focusing on just a few members of the team (Wasserman & Faust, 1994). In the case of plural leadership, it can show how much team members differ in their influence over each other. Network centralization describes the extent to which transformational leadership influence is concentrated around one individual (Hanneman & Riddle 2005) or whether multiple individuals are “equally central in the leadership network” (Meindl, Mayo & Pastor 2002, p. 5). Therefore, network centralization is a measure of distribution and is an appropriate operationalization of plural forms of transformational leadership (Small & Rentsch 2010).

However, for distributed leadership to be high, centrality scores must be small. In other words, a high degree of distributed leadership is represented by a low centralization value. To avoid potential confusion a process recommended by Gockel and Werth (2010) was followed in which centralisation scores were subtracted from one and the resulting values were used to analyse the relationships between a positive index of plural/distributed leadership and team level outcomes.

Finally, this research also explored the impact of reciprocal leadership ties. The extent in which a team is characterised by reciprocated ties may tell much about the degree of leadership cohesion within the group. A network that has a predominance of reciprocated ties over asymmetric connections is considered a more stable and more equal network than one characterised by one-way influences (Hanneman & Riddle 2011). There are several different approaches to indexing the degree of reciprocity in a group. One method is to analyse the number of ties that are involved in reciprocal relations relative to the total number of actual ties. Results from this “arc method” of analysis are expressed as a figure between 0 and 1 with the higher values indicating greater levels of reciprocity within the team.

While the collection of primary social network data occurred via online questionnaires, the use of SNA generated considerable challenges regarding data management. Network data needs to be in a specific format to efficiently enter it into software programs such as UCINET 6 (Borgatti, Everett & Freeman 2002). The responses for each of the 12 transformational leadership items for all teams were converted into an appropriate matrix format that illustrated the leadership relationship between team members. In addition, results were converted from the five-point Likert scale into binary code with 1: Never, 2: Rarely and 3: Sometimes being converted to “0” while 4: Often and 5: Always became “1”. To facilitate the conversion of such a large body of data a macro/app was developed in Microsoft Excel to automate this process. Once results were obtained from UCINET 6, data sets were reconfigured in Microsoft Excel to then be used in IBM SPSS Statistics for Windows (Version 23).
4.3 Task Interdependence

Conceptually task interdependence is central to team functioning and positively associated with the “sharedness” and distribution of leadership in teams (Bligh et al. 2006; Burke et al. 2006; D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014; Pearce 2004). To assess the relationship between plural leadership and task interdependence this research has utilised five items from an instrument developed by Pearce and Gregersen (1991). This describes task interdependence along two dimensions. The first reflects reciprocal or resource interdependence and the second indicates the extent to which an employee works independently. The five items used in this research assess reciprocal or resource interdependence. These forms of interdependence evolve when individuals working in a team perceive that they can only successfully complete their work if other team members provide some necessary resources. The five items were measured on an individual level with team members reporting the extent to which they depended on others in the team for the completion of their work. Coefficient alpha scores of 0.76 (Pearce & Gregersen 1991), 0.74 (Ganesh & Gupta 2013; Liden et al. 2006) and 0.77 (Hu & Liden 2011) support the use of this instrument. In addition, it has been effectively used in research to aggregate individual level responses to a group level of analysis (Liden et al. 2006). Research findings outlined in the pilot study and the main body of research added further to these findings.

4.4 Thriving

The thriving construct has been described as an indicator of psychological growth and is signposted by the joint experience of a sense of vitality and learning (Spreitzer & Porath 2013). The instrument which includes five vitality and five learning items has been developed and validated across five different distinct population samples (Porath et al. 2012). Initial research highlighted an alpha reliability coefficient of 0.94. This positive finding has been replicated in other research with Jiang (2017), Paterson, Luthans and Jeung (2014) and Wallace et al. (2013) reporting overall thriving alpha scores of 0.80, 0.93 and 0.91 respectively.

In addition, analysis of results from different population samples has shown good support for the two dimensional second-order factor structure of thriving (Porath et al 2012; Wallace et al. 2013). Because learning and vitality have been theoretically defined within the context of a higher order construct, the focus of this research will be on thriving, not on its constituent parts. In addition, to keep the questionnaire as concise as possible the two reverse items “I am not learning” and “I do not feel very energetic” were removed from the instrument. The remaining eight items included statements such as “I find myself learning often” (learning) and
"I feel alive at work" (vitality). Respondents were asked to reflect on these items at an individual level with results being aggregated to the team level for analysis.

### 4.5 Direction, Alignment and Commitment and Team Commitment

The Centre for Creative Leadership developed the DAC (Direction, Alignment and Commitment) Integrative Leadership Theory. One of the main characteristics of DAC is its focus on outcomes. Wherever a team displays DAC then leadership has been enacted (Drath et al. 2008). Several authors have researched the DAC model in a variety of different ways. For example, Eckert and Drath (2009) used the DAC model to analyse leadership culture in two multinational firms. Alternatively, McCauley et al. (2008) surveyed employees across five organisations to establish average DAC scores and link those to rates of interdependence within those organisations. While the DAC model has some evidence of success in practice, there are no empirical bodies of research that provide information about the reliability or structure of the DAC instrument.

The Centre for Creative Leadership granted permission for the questionnaire to be used as part of this research and it was included as a potential dependent variable. The questionnaire is comprised of 12 questions, with each of the three elements Direction, Alignment and Commitment containing 4 items. Items included, “Our work is united by a common goal” (Direction), “Our expectations of one another are clear” (Alignment) and “Everyone is committed”. This questionnaire was only used in the pilot study. Initial results raised some concerns about the structure of the instrument which was replaced with a team commitment instrument.

The team commitment measure used in the main body of research was developed by Bishop and Scott (2000) and was an adaptation of Mowday, Steers and Porters (1979) short form Organisation Commitment Questionnaire (OCQ). The authors modified the short form OCQ by changing the point of reference from organisation to team and defined team commitment as “the relative strength of an individual’s identification with, and involvement in, a particular team” (Bishop & Scott 2000, p. 439). This technique had been suggested by Reichers (1985) and referenced across a range of research literature (Scott & Townsend 1994). Mowday, Steers and Porters’ (1979) short form team commitment instrument has been successfully used in diverse research investigations (Bishop, Scott & Burroughs 2000; Park, Henkin & Egley 2005; Sheng, Tian & Chen 2010) and shown to be positively related to task performance which is, itself, influenced and is itself influenced by levels of team support, citizenship and teamwork behaviours and trust. In each of these bodies of research the instrument demonstrated good reliability with Cronbach alpha coefficients of 0.89 (Bishop, Scott & Burroughs 2000; Bishop et al. 2005), 0.92
(Park, Henkin & Egley 2005), 0.93 (Lehmann-Willenbrock, Kauffeld & Henschel 2015) and 0.96 (Sheng, Tian & Chen 2010). While Mowday, Steers and Porters’ (1979) original instrument contained eight items, one of the items ("I would accept almost any task in order to keep working in this team") displayed poor fit (0.45). It was considered inappropriate to ask respondents in a school setting when teams, such as subject departments, were predetermined and roles within those teams were often clearly defined and restricted within confined boundaries. The seven items that were used in this study included questions such as “I really care about the fate of this team” and “I am proud to tell others that I am part of this team”.

Several authors have argued that employee commitment at work is a "multi-dimensional concept consisting of elements of commitment to specific objects such as one’s organisation, work group, occupation, union and job" (Bligh, Pearce & Kohles 2006, p.304). Consequently, employee behaviours “may be affected, sometimes simultaneously, by several commitments” (Blight, Pearce & Kohles 2006, p.305). Approaches adopted in this research ensured that team commitment was clearly distinguished from other forms of the commitment construct by collecting team commitment measures at an individual level from each team member. However, conversely, team commitment was measured as an emergent team state that describes motivational and affective attitudes at a group level. Examining team commitment as a collective attitude is an expression of the shared perceptions, within the group, of the desire to maintain membership and to exert varying degrees of effort on behalf of the group. Analysing commitment by aggregating individual responses from within a group is consistent with earlier research approached adopted by Gardner, Wright and Moynihan (2001), Le Blanc and González-Romá (2012) and Paoluccie et al. (2018).

### 4.6 Team Learning Behaviour

The analysis of the findings from the pilot study and the subsequent elimination of the DAC instrument provided the opportunity to use team learning behaviour in conjunction with team commitment as dependent variables. In this research team learning was viewed as a collective behavioural practice that supported team members to effectively obtain and process data that allowed the team to adapt and improve (Edmondson 1999). This view suggests that plural forms of transformational leadership behaviours and thriving offer conditions for team members to learn. Consequently, team learning is an outcome, specifically a change in the range and capacity of a group’s potential behaviours (Wilson, Goodman & Cronin 2007).

Edmondson’s (1999) measure of team learning behaviours is one of the most widely adopted, both in the laboratory and field settings. The Team Learning Behaviour Survey was developed
through analysing both quantitative and qualitative research from 51 work teams in both manufacturing and service industries. The instrument includes seven items with respondents being asked to assess levels of team learning with questions such as “In this team, someone always makes sure that we stop to reflect on the team’s work process”. Edmondson’s (1999) original study reported a reliability measure of 0.78. More recently researchers have provided Cronbach Alpha scores of 0.75 (Hedlund & Osterberg 2013), 0.79 (Brueller & Carmeli 2011; Chan, Lim & Siew 2003), 0.82 (Huang 2013), 0.85 (Carmeli, Brueller & Dutton 2009) and 0.94 (Liu et al. 2014) all of which have provided further support for the integrity of the instrument. The Team Learning Behaviour Survey has also been used successfully in shared leadership research as a dependent variable (Huang 2013; Liu et al. 2014). In addition, this instrument has been shown to facilitate aggregation from individual member ratings of team learning to the team level of analysis (Edmondson 1999; Liu et al. 2014).

4.7 Control Variables

This research controlled for various team characteristics that have been associated with both team performance and plural leadership literature (Carson, Tesluk & Marrone 2007; Kozlowski & Bell 2011; Nicolaides et al. 2014; Small & Rentsch 2010). These factors included team size and average team tenure, and both have shown complex and sometimes conflicting relationships within the research literature (Barnett & Weidenfeller 2016; Cox, Pearce & Perry 2003; Nicolaides et al. 2014).

On the one hand larger team size has been found to have a positive effect on performance in top management teams (Hambrick & D’Aveni 1992) with bigger teams being able to access more potential resources with more people available to engage with tasks and provide a larger pool of ideas and perspectives. In contrast, larger groups have also been shown to experience coordination problems (Kozlowski & Bell 2011) and be less effective on several criteria than smaller groups (Pearce & Simms 2002). In many cases, specific team size recommendations are not seen as particularly meaningful because effective size is likely to be a function of the team task. Furthermore, in the domain of shared leadership, recent findings of a meta-analysis conducted by Nicolaides et al. (2014) found that team size “did not appear to interact with shared leadership” (Nicolaides et al. 2014, p. 933). It is apparent from this research that there are several questions and complexities around team size and the impact of team size may be dependent on specific team contingencies. It is also clear that team size may act as a covariate of plural leadership and team process and has therefore been included in this study as a control variable. Team size was measured as the number of team members on the team.
Team tenure is also an important but complex factor which has been the subject of several studies in relation to team processes and performance. Little is known about the effects of team tenure on aspects like interpersonal dynamics in teams and research has shown conflicting findings (Koopmann et al. 2016). For example, whereas a study conducted by Edmondson (1999) exhibited positive associations between team tenure and team psychological safety climate, other studies have reported null associations (Bunderson & Boumgarden, 2010).

Teams literature posits that time is required for team members to garner familiarity and for teams to develop maturity with the result that they demonstrate greater coordination and potentially higher team performance over time (Eisenhardt & Schoonhoven 1990; Harrison et al. 2002; Harrison et al. 2003; Katz 1982; Guzzo & Dickson 1996). Alternatively, Koopmann et al. (2016) have established that rather than display a linear relationship, team tenure has a curvilinear influence on team interpersonal dynamics with new teams experiencing smoother interpersonal relationships than their counterparts in moderately tenured teams. A plausible rationale for these inconsistent findings is that like team size, the relationship between team tenure, team processes and outcomes are complex and context dependent.

While team tenure has received limited direct empirical attention in plural leadership research, some shared and collective leadership theory has presented competing arguments on the role of team tenure in the shared and collective leadership-team performance relationships (Cox, Pearce & Perry 2003; Nicolaides et al. 2014). Scholars have proposed that time is required for team maturity to progress and that team maturity is positively associated with the development of collective and shared leadership in teams (Cox, Pearce & Perry 2003; Mumford et al. 2012; Wang, Waldman & Zhang 2014). In this instance maturity is viewed as a proxy for tenure and it is proposed that the more time a team is together then the more likely shared leadership will emerge. This hypothesised relationship has not been supported by the findings of a meta-analysis described by Nicolaides et al. (2014) nor by a recent study conducted Wang et al. (2017). Both groups of researchers reported that as team tenure increased shared leadership validities decreased, so that the effects of shared leadership were weaker at the end of task cycles when team members had been together for longer. They suggested this may be caused by changing team membership, the development of habitual routines over time and the reluctance of some team members to relinquish leadership authority (Nicolaides et al. 2014; Wang et al. 2017).

While scholars may acknowledge that different modalities of plural leadership occur over time (Pearce & Conger 2003; Pearce, Yoo & Alavi 2004), the dearth of research and lack of clarity concerning the relationship between team tenure and plural forms of leadership in teams...
(Nicolaides et al. 2014) suggested that it was important to control for team mean tenure. This measure references the number of years that individual team members reported membership of the team and is calculated as the average of these individual values.

4.8 Response Rating Scales
Several changes were made to the research questionnaire after the initial pilot study. During the pilot study all, dependent variables were measured using a four-point Likert scale that extended from “Strongly Disagree” through to “Strongly Agree”. While there is some pragmatic rationale for Likert scales that are shorter (Cummins & Gullone 2000) some researchers (Cummins & Gullone 2000; Finstad 2010; Preston & Colman 2000) have identified that those scales with fewer response categories yielded the least reliable scores and the worst validity and discriminating power. In contrast scales with more response categories up to and including seven items, were found to be significantly higher on several indices of reliability, validity and discriminating power (Diefenbach, Weinstein & O’Reilly 1993; Finstad 2010; Lewis 1993). In addition, some authors also established that increasing the number of scale points improved scale sensitivity (Cummins & Gullone 2000; Diefenbach, Weinstein & O’Reilly 1993) so that seven-point scales were found to be more sensitive than four- or five-point scales. These results taken together suggest that rating scales of seven response categories provide greater validity and discrimination than smaller four-point categories (Preston & Colman 2000). Consequently, all instrument ratings for each of the dependent variables (i.e. Thriving, Team Commitment, Task Interdependence and Team Learning) were modified to incorporate a seven-point Likert scale for use in the main body of research with measures extending from “Strongly Disagree” through to “Neutral” and finally “Strongly Agree”. The relationship between each of these dependent variables was then compared with the topography of plural forms of transformational leadership behaviours in each of the 76 teams. The nature of that data analysis is outlined below.

4.9 Data Analyses
For the preliminary analyses information from the pilot study was not used to explore relationships between variables. Information was employed specifically to test the reliabilities of each construct and provide an empirical summary of the structure of each instrument. In addition, the pilot study provided an opportunity to design a research procedure and identify logistical problems which may have occurred using the proposed methods.

The dimensions, reliability and structure of each of the four instruments employed in the preliminary analysis were evaluated using IBM SPSS or AMOS Statistics for Windows (Version
23). The Cronbach’s alpha statistic was utilised to measure internal consistency and test whether items in each instrument measured the same underlying dimensions. In addition, various tests were employed to examine the different underlying latent constructs within the instruments. Prior to exploring those interrelationships, the data was assessed for its suitability to be used for principal components analysis (PCA) and confirmatory factor analysis (CFA). The PCA and CFA results provided an important insight into the factor structure of each variable and assisted in assessing the suitability of components for the main body of research. Those same components that were utilised in the main body of research were again assessed for both reliability and structure. Finally, the pilot study also afforded an opportunity to assess the viability of utilising social network analysis (SNA) as a technique to assess plural leadership relationships in teams. Results of the pilot study are outlined in the following chapter.

In the second stage of data analysis, the reliability and validity of the different scales were again assessed using the Cronbach’s alpha statistic and both PCA and CFA. Prior to performing these measurements, the suitability of statistics was again evaluated to determine the factorability of the data. All analysis of the data was again conducted using IBM SPSS or AMOS Statistics for Windows (Version 23).

This research has focused on six hypotheses all of which were outlined in detail in Chapter Three. Several of these propositions concentrated on the relationship between three different forms (density, distribution and reciprocity) of plural transformational leadership and four team level dependent variables (task interdependence, team learning behaviours, commitment and thriving). The remaining two hypotheses explored the relationships between thriving and team learning behaviours (hypothesis five) and thriving and commitment (hypothesis six), again all at a team level. For hypotheses one to four the measurement of plural leadership in teams adhered to the methodology and recommendations of several earlier researchers (Carson, Tesluk & Marrone 2007; Chiu, Owens & Tesluk 2016; Gockel & Werth 2010; Ishikawa 2012; Liu et.al 2014; Meindl, Mayo & Pastor 2002; Small & Rentsch 2010) and utilised two social network statistics, density/sharedness and decentralisation/distribution. Unlike earlier research, this study also incorporated reciprocity/mutuality as an additional social network measure. Social network measures were calculated by firstly converting the responses from team members into a matrix with as many rows and columns as there were actors in each of the teams. The scores in the cells of the matrix record information about the ties between each pair of team members. These relationships were represented as binary numbers. Social network analysis was undertaken using UCINET for Windows (Borgatti, Everett & Freeman 2002) for each of the 12 Transformational Leadership items for every team for each measure. These density,
decentralisation and reciprocity scores were then used to analyses associations with the dependent variables.

Hierarchical multiple regression was used in this research to determine the relationship between the dependent and independent variables in each of the six hypotheses. This statistical technique provided the opportunity to control for the effects of two potential covariates (team size and average tenure) while considering the possible predictive effects of each independent variable. This methodology was prevalent in shared leadership research (Carson, Tesluk & Marrone 2007; Chiu, Owens & Tesluk 2016; Ishikawa 2012; Martin et al 2013; Ramthun 2013) and has been successfully utilised by Small & Rentsch (2010) to evaluate the relationship between shared leadership distribution in teams and objective team performance. Prior to conducting hierarchical multiple regression, a preliminary analysis was undertaken to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. A summary of the various assumptions and the associated results were reported. Each of the analysis were performed using IBM SPSS (Version 23) to assess the relationships outlined in hypothesis one to six. The results for each of the hierarchical multiple regression analysis are illustrated, described and interpreted in the next chapter.
5 Results

5.1 Pilot study

The purpose of the pilot study was to test the feasibility of expediting the research plan while at the same time pre-testing research instruments. It was also important to evaluate whether the research protocols were realistic and workable and to ascertain whether the sample frame and technique was effective. The findings of a preliminary study of 163 respondents and 28 teams delivered some important information about the validity and characteristics of items included within the four main areas listed below and illustrated in Appendix J.

Task interdependence (Pearce & Gregersen 1991)
Thriving; Vitality and Learning (Porath et al., 2012)
Direction, Alignment and Commitment (Centre for Creative Leadership 2013)
Transformational Leadership (Rafferty & Griffin 2004)

This discussion provides specific details regarding the utility of these instruments and makes suggestions about refining and improving some of the elements within this questionnaire. Data collected in this pilot study was not included in the main body of research. All analysis of the data was conducted using IBM SPSS or AMOS Statistics for Windows (Version 23). In addition, social network analysis, specific to the evaluation of Transformational Leadership data (Rafferty & Griffin 2004) were analysed using UCINET 6. In addition, the first three instruments - task interdependence, thriving and DAC - employed a four-point Likert scale that extended from 1; Strongly Disagree to 4; Strongly Agree. In contrast, every team member rated each of his or her peers based on the 12 items in the Transformational Leadership instrument by using a Likert scale ranging from 1; “Never”, to 5; “Always”. This was commensurate with the scale used to measure the Transformational Leadership items developed by Rafferty and Griffin (2004).

5.1.1 Task Interdependence

The five items of the team task -interdependence scale shown in Appendix J were checked for reliability. Items included statements like “I work closely with these team members in doing my work” and “My work requires me to consult with these team members frequently”. Results indicated that this scale had good internal consistency, with a Cronbach Alpha coefficient of 0.87. These items were also subjected to principal components analysis (PCA). Prior to performing PCA, the data were first assessed to ascertain whether they were suitable for factor analysis. Inspection of the correlation matrix revealed the presence of many coefficients of 0.4 and above. Furthermore, that Kaiser-Meyer-Olkin Measure of Sample Adequacy (KMO), which is an index of the linear relationships between variables, was 0.84; a result that would be classified by Kaiser (1974) as meritorious. At the same time the Bartlett’s test of Sphericity, which tests the overall significance of all the correlations within the correlation matrix, reached statistical significance (p < .001). An assessment of these results quantified that the data was suitable for PCA.
The PCA results indicated that these five items loaded on one component with an eigenvalue above one and which accounted for 66% of the variance. This is in line with the original findings provided by Pearce and Gregersen (1991). Based on these findings it was decided that these items would remain in the questionnaire.

5.1.2 Thriving

The framework used in this research viewed thriving as an emergent state dependent upon transformational influence relationships in teams. Eight items were selected from The Thriving at Work instrument (Porath et al. 2012) and these were used to measure the two-dimensional structure of thriving (vitality and learning) within teams (Appendix J). Items that were used in this instrument included statements such as “I feel alive and vital” and “I see myself continually improving”.

The Cronbach’s alpha value of 0.91 suggested very good internal consistency for these items. At the same time preliminary PCA results, supported the use of factor analysis. Bartlett’s test of sphericity, was significant (p < .001), indicating that it was appropriate to use the factor analytic model on this set of data. The Kaiser-Meyer-Olkin measure of sampling adequacy showed that the strength of the relationships among variables (KMO = .898), was high (Kaiser 1974) therefore it was acceptable to proceed with the analysis.

However, while the original study conducted by Porath et al., (2012) demonstrated some support for the two-dimensional structure of thriving (i.e. vitality and learning), the PCA results for this data clearly loaded only on one component that had an eigenvalue greater than one, accounting for 62% of the variance. Further examination of the structure of these items was undertaken using IBM SPSS AMOS (Version 23) - Confirmatory Factor Analysis (CFA).

Table 5-1 provides an indication as to whether the hypothesised structures (i.e. vitality and learning) were a good fit to the observed data. While there is no prescriptive rule about which goodness of fit (GOF) indices should be reported, it is generally recommended that multiple indices be considered simultaneously. This includes the reporting of both incremental (also referred to as comparative or relative fit indices), and absolute fit indices. The former measure the increase in fit relative to the baseline model and the later measure the extent to which the specified model reproduces the sample co-variance matrix (Lei & Wu 2007). Examples of incremental fit indices illustrated in Table 5-1 include the NFI, TLI and CFI indices, while absolute measures incorporate Chi-square, GFI, and RMR. Researchers also regularly report a third type of goodness of fit measure. This “non-centrality parameter”, which is calculated by subtracting the degrees of freedom from the chi-square value, is expressed as an RMSEA index (Schreiber et al. 2006). This index, along with several of the incremental indices, is affected by sample size, so that smaller samples are shown as having poorer fit (i.e. have a lower fit index value). This array of multiple indices reflects different aspects of model fit and their use aligns with recommendations from a variety of researchers (Hooper, Coughlan & Mullen 2008; Hu & Bentler 1998; Lei & Wu 2007; Schreiber et al. 2006).
Adding to the complexity of model evaluation, the recommendations for cut-off values for several measures have changed over time and vary between authors. Importantly Marsh, Hau and Wen (2004) emphasise that there is no golden rule or absolute cut-off value for each fit index. They state that “cut-off values may not work equally well with various types of fit indices, sample sizes, estimates or distributions” (p. 322). However, convention has declared that values for NFI, TLI, CFI and GFI that exceed 0.90 reflect acceptable fit, while more contemporary parameters have mandated values of 0.95 or above as illustrating good fit (Hooper, Coughlan & Mullen 2008; Hu & Bentler 1998; Schreiber et al. 2006). In addition, the smaller the root mean square residual (RMSR) figure the better the match with values close to zero indicating a perfect fit. Similarly, RMSEA values below 0.08 indicate a good fit while figures between 0.08 and 1.00 suggest a mediocre solution (Hooper, Coughlan & Mullen 2008). Finally, Chi-square values are a traditional measure for evaluating overall model fit and are usually the first statistic reported. Satisfactory model fit provides a nonsignificant result equal to or greater than a p=0.05 threshold. However, the statistic is sensitive to sample size and multivariate normality and therefore, a relative/normed Chi-square (χ²/df) is often used to determine acceptable fit. This is listed in the SPSS AMOS (Version 23) output as CMIN/DF and while there is no consensus regarding an acceptable ratio for this statistic a Chi-square/df ratio equal to or smaller than 3 is viewed as indicating an acceptable fit between the hypothetical model and sample data (Hooper, Coughlan & Mullen 2008; Schreiber et al. 2006).

The results illustrated in Table 5-1 provide details for both the Independence and Default models. While the Independence model provides more restrictive parameters and estimates of model fit, the Default results contain the fit statistics for the specified two factor structure (i.e. vitality and learning). Not surprisingly, results did not conclusively support an independence model. (i.e. a vitality dimension and learning dimension). This is not surprising since the eight items used in this instrument were also highly correlated and the two factors specified in the model were significantly co-varied (Appendix M). At the same time, some facets highlighted in the Default model displayed either mediocre or good fit. Consequently, the information contained within the criteria of goodness of fit is inconclusive.

While these results may appear unusual it must be remembered that not all the results from the earlier studies (Porath et. al 2012) were entirely conclusive. In fact, in some samples the correlation between learning and vitality was as high as 0.82 and 0.87. Despite the lack of clarity regarding the dimensions of this construct, it was decided to retain this component of the investigation as the two dimensions together, “represent thriving at work and capture the affective and cognitive components of individual growth and development in a work context” (Porath et al. 2012, p. 269). It was also anticipated that, by retaining the thriving instrument, an opportunity may arise to reassess the relationship between observed variables and latent factors by analysing responses from a larger sample size.
### Table 5-1: Confirmatory Factor Analysis Results for Thriving

<table>
<thead>
<tr>
<th>Model fit index</th>
<th>Criteria of good fit</th>
<th>Thriving results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square (CMIN)</td>
<td>( \chi^2/df = &gt;3 ); an insignificant value, i.e., ( p \geq 0.05 ) (a)</td>
<td>Independence model; ( \chi^2/df = 30.18 ), (poor fit); ( p=.000 ) (poor fit). Default model; ( \chi^2/df = 2.80 ) (good fit); ( p=.000 ) (poor fit).</td>
</tr>
<tr>
<td>NFI; (Normed Fit Index)</td>
<td>&gt; 0.95 (b)</td>
<td>Independence model=.000 (poor fit). Default model = 0.94 (mediocre fit).</td>
</tr>
<tr>
<td>TLI; (Tucker-Lewis Index)</td>
<td>&gt;0.95 (c)</td>
<td>Independence model=.000 (poor fit). Default model = 0.94 (mediocre fit).</td>
</tr>
<tr>
<td>CFI; (Comparative fit index)</td>
<td>&gt; 0.95 (d) with values closer to 1 indicating better fit</td>
<td>Independence model=.000 (poor fit). Default model = 0.96 (good fit).</td>
</tr>
<tr>
<td>GFI; (Goodness of Fit index)</td>
<td>&gt;0.95 (e.)</td>
<td>Independence model=.30 (poor fit). Default model = 0.92 (mediocre fit).</td>
</tr>
<tr>
<td>RMR; (Root Mean Square Residual)</td>
<td>&lt;0.05 (f)</td>
<td>Independence model=.12 (poor fit). Default model = 0.02 (good fit).</td>
</tr>
<tr>
<td>RMSEA*; (Root mean square error of approximation)</td>
<td>&lt;.08 shows good fit while .08-.10 displays mediocre fit (g)</td>
<td>Independence model=.426 (poor fit). Default model = 0.11 (poor fit).</td>
</tr>
</tbody>
</table>

Reference; (a) (Hooper, Coughlan & Mullen 2008) (b) (c.), (d), (e.) (f) (Hooper, Coughlan & Mullen 2008; Hu & Bentler 1998; Schreiber et al. 2006) (g) (MacCallum, Browne & Sugawara 1996)

RMSEA *; Independence 90% CI = .401, .451; Default 90% CI= .073, .140

#### 5.1.3 Direction, Alignment and Commitment

The 12 items illustrated in Appendix J were to be used as dependent variables to determine the association between the Plural Transformational Leadership Relationships in teams with three collective leadership outcomes, direction, alignment and commitment. This set of items had been generated by the Centre of Creative Leadership (CCL) who had given their permission to use them as part of this research. While these items had frequent use as a part of a consultancy program by CCL (McCauley 2013) it was clear that there had been no published work evaluating this instrument.

Using data from the 163 respondents, the initial analysis of the 12 items in the DAC instrument was very positive, with a Cronbach alpha score of 0.930 suggesting good internal consistency. However, PCA and CFA results were less supportive. While the KMO (0.907) and Bartlett’s test (\( p < .001 \)), indicated that factor analysis was appropriate, only one component was able to be extracted from the data. This component had an eigenvalue greater than one and explained approximately 57% of the total variance. Further analysis using CFA included the results shown below in Table 5-2. Some of the values expressed in the results for the Default model specified a level of mediocre fit between the DAC factors and the observed data, but there was no support for an independence model of three factors (i.e. direction, alignment and commitment). This lack of
validation was substantiated by other AMOS results which showed that the factors specified in DAC were highly correlated, and significantly co-varied with one another (Appendix K).

These results suggest that, while these 12 items are very good at measuring something about teams, it is difficult to ascertain specifically what is being measured other than to suggest that it is an affective state that probably incorporates elements of team commitment, coordination and future direction. Because of the nature of these findings and the lack of any other empirical work using this instrument, it was decided not to retain this component of the questionnaire. Instead it was decided to focus on one element (team commitment) potentially measured by the DAC instrument. To do this the 12 DAC items were replaced by seven-items included in an instrument designed by Bishop and Scott (2000). This scale was based on the Organizational Commitment Questionnaire short form (Mowday, Steers, & Porter, 1979) which has been commended by Swailes (2002) for portraying a well-rounded picture of what commitment is and what it means for the organisation. Team commitment was measured by modifying the short form of the Organizational Commitment Questionnaire to refer to the strength of team members involvement and identification with the team rather than the organisation. As discussed in the previous chapter, earlier research has shown strong reliability scores ranging from 0.89 (Bishop, Scott & Burroghs 2000) to 0.96 (Sheng, Tian & Chen 2010). The items included in this research are shown in re included in Appendix J.

**Table 5-2: Confirmatory Factor Analysis Results for Direction, Alignment and Commitment**

<table>
<thead>
<tr>
<th>Model fit index</th>
<th>Criteria of good fit</th>
<th>DAC results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square (CMIN)</td>
<td>(χ²/df) = &gt;3; an insignificant value, i.e., p &gt;/= 0.05 (a)</td>
<td>Independence model; (χ²/df) = 19.00 (poor fit); p= 0.000 (poor fit). Default model; (χ²/df) = 2.58 (good fit); p= 0.00 (poor fit)</td>
</tr>
<tr>
<td>NFI; (Normed Fit Index)</td>
<td>&gt; 0.95 (b)</td>
<td>Independence model= 0.00 (poor fit). Default model = 0.89 (poor fit).</td>
</tr>
<tr>
<td>TLI; (Tucker-Lewis Index)</td>
<td>&gt; 0.95 (c)</td>
<td>Independence model= 0.00 (poor fit). Default model = 0.91 (mediocre fit).</td>
</tr>
<tr>
<td>CFI; (Comparative fit index)</td>
<td>&gt; 0.95 (d) with values closer to 1 indicating better fit</td>
<td>Independence model= 0.00 (poor fit). Default model = 0.93 (mediocre fit).</td>
</tr>
<tr>
<td>GFI; (Goodness of Fit index)</td>
<td>&gt;0.95 (e.)</td>
<td>Independence model= 0.24 (good fit). Default model = 0.89 (poor fit).</td>
</tr>
<tr>
<td>RMR; (Root Mean Square Residual)</td>
<td>&lt;0.05 (f)</td>
<td>Independence model= 0.20. (poor fit). Default model = 0.02 (good fit).</td>
</tr>
<tr>
<td>RMSEA; (Root mean square error of approximation)</td>
<td>&lt;.08 shows good fit while .08-.10 displays mediocre fit (g)</td>
<td>Independence model= 0.34 (poor fit). Default model = 0.10- (mediocre fit).</td>
</tr>
</tbody>
</table>
The removal of the DAC instrument provided the opportunity to add an additional dependent variable into the research model. Team learning was identified within the team, distributed and shared leadership literature as a potentially important outcome of plural leadership practices (Chiu, Lin & Chien 2009; Day, Gronn & Salas 2004; Liu et al 2014; Raes et al. 2013). Therefore, it was included as part of the final research framework that constituted the foundation for the main body of enquiry. Team learning behaviours were measured using the Team Learning Survey developed by Edmondson (1999). The inclusion of this measure enabled an exploration of the conditions in which learning occurs naturally within organisational work groups. These learning behaviours consist of activities undertaken by one or more team members, through which a team obtains and processes information that allows the group to adapt and improve (Edmondson 1999). The seven items used in this research are included in Appendix J.

The centrepiece of this research was plural leadership in teams, specifically the patterns of transformational influence relationships within teams. The importance of Rafferty and Griffin’s (2004) transformational leadership instrument lies not only in its role as the primary independent variable in the study but also in relation to the feasibility of using these items to investigate the density (sharedness), decentralisation (distribution) and reciprocity (mutuality) of leadership relationships in teams. Therefore, it was critical that information in the pilot study supported the reliability and conceptual structure of the instrument and that the research analysis and protocol were realistic.

The 12 Transformational Leadership Behaviours are listed in Table 5-3. Individual responses for each of the 12 items were analysed using SPSS. These findings suggested that this instrument had very good internal consistency (Cronbach alpha = 0.94) and Inter-Item Correlation Matrix suggested that all items measured components of the scale. A KMO measure of sampling adequacy score of 0.88 and a Bartlett’s Test of Sphericity that reached statistical significance supported the use of PCA to determine the factors within the correlation matrix for these 12 items.

The PCA extracted three items which are shown below in Table 5-4. A Varimax rotation of that data provided a better understanding of the different sub dimensions. However, this did not accurately duplicate the cluster of items used by Rafferty & Griffin (2004) to assess transformational leadership. While components one and three appear to load almost exclusively around Intellectual Stimulation and Personal Recognition respectively, component two might be best described as motivational or empowering leadership as it combined elements of both “inspirational communication” and “supportive leadership”. This part of the analysis provided support for the ongoing inclusion of all 12 items shown in this instrument.
Table 5-3: Theoretical Subdimensions used to assess Transformational Leadership (Rafferty & Griffin 2004)

<table>
<thead>
<tr>
<th>Subdimensions</th>
<th>Leadership Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inspirational Communication</strong></td>
<td></td>
</tr>
<tr>
<td>Lead 1</td>
<td>Says things that make me proud to be part of this School</td>
</tr>
<tr>
<td>Lead 2</td>
<td>Says positive things about this team</td>
</tr>
<tr>
<td>Lead 3</td>
<td>Encourages me to see changing environments as situations full of opportunities</td>
</tr>
<tr>
<td><strong>Intellectual Stimulation</strong></td>
<td></td>
</tr>
<tr>
<td>Lead 4</td>
<td>Challenges me to think about old problems in new ways</td>
</tr>
<tr>
<td>Lead 5</td>
<td>Has ideas that have forced me to rethink some things that I have never questioned before</td>
</tr>
<tr>
<td>Lead 6</td>
<td>Has challenged me to rethink some of my basic assumptions about my work</td>
</tr>
<tr>
<td><strong>Supportive Leadership</strong></td>
<td></td>
</tr>
<tr>
<td>Lead 7</td>
<td>Considers the feelings of team members before acting</td>
</tr>
<tr>
<td>Lead 8</td>
<td>Behaves in a manner which is thoughtful of my individual needs</td>
</tr>
<tr>
<td>Lead 9</td>
<td>Sees that the interests of team members are given due consideration</td>
</tr>
<tr>
<td><strong>Personal Recognition</strong></td>
<td></td>
</tr>
<tr>
<td>Lead 10</td>
<td>Commends me when I do a better than average job</td>
</tr>
<tr>
<td>Lead 11</td>
<td>Acknowledges improvement in my quality of work</td>
</tr>
<tr>
<td>Lead 12</td>
<td>Personally, compliments me when I do outstanding work</td>
</tr>
</tbody>
</table>
### Table 5-4: Principal Components Structure of the 12 Transformational Leadership Items

<table>
<thead>
<tr>
<th>Items</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1*</td>
</tr>
<tr>
<td>Lead 1: Says things that make me proud to be part of this School</td>
<td>0.46</td>
</tr>
<tr>
<td>Lead 2: Says positive things about this team</td>
<td></td>
</tr>
<tr>
<td>Lead 3: Encourages me to see changing environments as situations full of opportunities</td>
<td>0.74</td>
</tr>
<tr>
<td>Lead 4: Challenges me to think about old problems in new ways</td>
<td></td>
</tr>
<tr>
<td>Lead 5: Has ideas that have forced me to rethink some things that I have never questioned before</td>
<td>0.87</td>
</tr>
<tr>
<td>Lead 6: Has challenged me to rethink some of my basic assumptions about my work</td>
<td>0.86</td>
</tr>
<tr>
<td>Lead 7: Considers the feelings of team members before acting</td>
<td></td>
</tr>
<tr>
<td>Lead 8: Behaves in a manner which is thoughtful of my individual needs</td>
<td></td>
</tr>
<tr>
<td>Lead 9: Sees that the interests of team members are given due consideration</td>
<td></td>
</tr>
<tr>
<td>Lead 10: Commends me when I do a better than average job</td>
<td>0.30</td>
</tr>
<tr>
<td>Lead 11: Acknowledges improvement in my quality of work</td>
<td>0.43</td>
</tr>
<tr>
<td>Lead 12: Personally, compliments me when I do outstanding work</td>
<td></td>
</tr>
</tbody>
</table>

Percentage variance: 60 13.20 8.9

*Factor 1* Intellectual Stimulation; *Factor 2** Empowering Leadership; *Factor 3*** Personal Recognition

Individual data from each of the 163 respondents was also placed in a series of matrices which highlighted the person to person responses within each team for each of the 12 items. An example of one of these sets of social network analysis (SNA) results are shown in Appendix L. Unfortunately, some of the matrices for the teams were not complete, so the total number analysed was reduced from 32 to 28 teams. While data was collected using a 5-point Likert Scale, this information was converted from ordinal into binary data (1, 2, 3 =0; 4, 5=1). Each of the 12 individual matrices for all the 28 teams were then independently uploaded in UCINET 6 (Borgatti, Everett & Freeman 2002). The UCINET 6 data provided information about group-level measures that
examined the density, distribution (decentralisation) and reciprocity of influence relationships within each team for the 12 separate transformational leadership items.

The SNA methods outlined above, were all successfully adopted for use in the pilot study and produced a wide variance of scores. For example, across the 28 teams, density figures ranged from 31% to 83% and centralisation values extended from 0.56 (low plural/distributed leadership score of 0.44) to 0.21 (high plural/distributed leadership score of 0.79). There was also considerable diversity in the reciprocity results with lows of 13% and highs of 85%. In summary the data effectively differentiated between teams and results appeared to support the use of Rafferty and Griffin’s (2004) instrument and the use of SNA to evaluate plural leadership behaviours.

5.1.4 Conclusion

In conclusion, while the results of the pilot study were not used to test research hypothesis nor were they included in the main body of data, the information was significant as it supported a variety of changes and improvements to several instruments and research protocols. Firstly, it was considered important to extend the existing 5-point Likert Scale to a 7-point measure for the dependent variables. This more closely aligned with some aspects of existing research in this area (Small & Rentsch 2010) and at the same time a 7-point scale had also been shown to better differentiate Likert Scales such as those used in this study (Finstad 2000; Malhotra, Krosnick & Thomas 2009; Song & Oh 2016). Secondly, the removal of the DAC instrument provided the opportunity to assess two new dependent variables, team commitment (Bishop & Scott 2000) and team learning behaviours (Edmondson 1999). At the same time, the preliminary investigation of the results from this pilot study provided empirical support for the independent variable transformational leadership and the construct of the four subdimensions used in this research.

Furthermore, an analysis of the two remaining instruments provided important data that verified the reliability of both thriving (Porath et al. 2012) and interdependence (Pearce & Gregersen 1991) measures but with some questions also being raised around the underlying structure of the thriving construct. Finally, the pilot study also identified some potential data management problems. The construction of team matrices for each of the 12 Transformational Leadership Items was found to be very time consuming. This led to the development of a macro/app which was used in the main body of research and enabled the efficient management and reformatting of data to create appropriate matrices of team member responses.

While new opportunities of enquiry were created from the inclusion of two new instruments to replace DAC, it was also evident that some preliminary research needed to be undertaken to assess the reliability of those instruments. At the same time, it was also important to investigate the underlying structure of the items included in both constructs. While this analysis was being undertaken, the occasion allowed for an additional review of other components of this research so that the veracity and structure of all instruments could be
further substantiated. The outcomes of this review using data from the main body of research is outlined below.

5.2 Main Study
5.2.1 Descriptive Statistics
Owing to the adjustments made to the Likert scales used in all dependent variables, and the substitution and addition of instruments because of the findings in the Pilot Study, it was important to re-establish the veracity and structure of constructs used in the main part of this research. These tests were undertaken using data collected from 428 respondents working in predominantly Middle Management or Executive teams (Table 5-1) in one of 20 different schools. The teams were found in both secondary (36%) and primary (64%) schools which were principally private (80%) and located in the Perth metropolitan area (84%).

Table 5-5: Characteristics of Teams

<table>
<thead>
<tr>
<th>Variety of Teams</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Department</td>
<td>57</td>
<td>13.4</td>
</tr>
<tr>
<td>Executive and Senior Management</td>
<td>95</td>
<td>22.3</td>
</tr>
<tr>
<td>Year Group</td>
<td>58</td>
<td>13.6</td>
</tr>
<tr>
<td>Interdisciplinary Team</td>
<td>28</td>
<td>6.6</td>
</tr>
<tr>
<td>Action Learning Team</td>
<td>50</td>
<td>11.7</td>
</tr>
<tr>
<td>Middle Management Team</td>
<td>92</td>
<td>21.6</td>
</tr>
<tr>
<td>Pastoral Care Team</td>
<td>12</td>
<td>2.8</td>
</tr>
<tr>
<td>School Action Learning Team</td>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>426</td>
<td>100</td>
</tr>
<tr>
<td>Missing Data</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Table 5-6 summarises the means, standard deviations, correlations, and reliabilities for all the targeted variables. As expected, most of the main variables were correlated at a significant level ($p < 0.05$), which provided further preliminary evidence to support the hypothesised relationships. These are expressed in positive and significant associations between transformational leadership and the dependent variables thriving and team learning behaviours and team commitment.
Table 5-6: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team size</td>
<td>7.1</td>
<td>3.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of time in the team</td>
<td>4.3</td>
<td>1.9</td>
<td>0.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interdependence</td>
<td>5.8</td>
<td>1.1</td>
<td>-.20**</td>
<td>.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.90</td>
</tr>
<tr>
<td>Thriving</td>
<td>5.8</td>
<td>0.96</td>
<td>-.11*</td>
<td>-.04</td>
<td>.98**</td>
<td></td>
<td></td>
<td></td>
<td>(.95)</td>
</tr>
<tr>
<td>Team Commitment</td>
<td>5.6</td>
<td>1.05</td>
<td>-.11*</td>
<td>.34</td>
<td>.56**</td>
<td>.79**</td>
<td></td>
<td></td>
<td>(.92)</td>
</tr>
<tr>
<td>Team Learning</td>
<td>5.2</td>
<td>0.92</td>
<td>-.09</td>
<td>-.93</td>
<td>.45**</td>
<td>.66**</td>
<td>.65**</td>
<td></td>
<td>(.80)</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>3.7</td>
<td>0.62</td>
<td>.13**</td>
<td>.24**</td>
<td>.34**</td>
<td>.51**</td>
<td>.47**</td>
<td>.49**</td>
<td>(.95)</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)
Scale reliability values are in parenthesis along the diagonal

5.2.2 Factor Structure; Assumptions

While the Cronbach alpha scores across all instruments were strongly positive it was important to re-evaluate and explore the configuration and nature of the latent constructs found in each of the instruments. The validity of each of the theoretical structures was initially appraised using Principal Components Analysis (PCA) with further examination of the structures being undertaken using SPSS AMOS (Version 23)-Confirmatory Factor Analysis. Prior to performing PCA, the suitability of data for factor analysis was assessed. Each of the correlation matrices illustrating the relationship between items and components within each of the instruments are shown in Appendix M. This information is summarised in Table 5-7. An inspection of those results revealed some variation in the sample size used to analyse each instrument. In the case of the Transformational Leadership instrument, some participants had not followed directions and so their responses were excluded. In each of the other samples, any incomplete cases were omitted, so that overall, there was no missing data. The Kaiser-Meyer-Oklin values, which ranged from 0.843 to 0.939, all exceeded the recommended cut-off value of .6 (Kaiser, 1970, 1974) and all the Bartlett’s Test of Sphericity (Bartlett 1954) reached statistical significance. Together these sets of results supported the factorability of the correlation matrices for each instrument.
Table 5-7: Assessments of the Suitability of Data for Factor Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>n=</th>
<th>Variance</th>
<th>Range of Item Coefficients</th>
<th>KMO</th>
<th>Bartlett's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Interdependence</td>
<td>427</td>
<td>72.60</td>
<td>Low 0.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving</td>
<td>427</td>
<td>82.64</td>
<td>High 0.77</td>
<td></td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Team Commitment</td>
<td>423</td>
<td>69.27</td>
<td>Low 0.50</td>
<td></td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Team Learning</td>
<td>423</td>
<td>49.31</td>
<td>High 0.78</td>
<td></td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>371</td>
<td>84.39</td>
<td>Low 0.47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.2.3 Factor Structure; Dependent Variables

An inspection of the matrices for each of the dependent variables (Appendix M) revealed that most correlation coefficients were above 0.30 and demonstrated positive and significant associations. However, an exception which was found in the results for the Team Learning Instrument. These findings, which are illustrated in Appendix M showed that Item Two (“2; This team tends to handle differences of opinion privately rather than addressing them directly as a group”) had a weak association with the other six items in the instrument. Furthermore, results from the initial PCA analysis highlighted that Item Two was weakly associated with the single component (0.186) while all other items displayed loadings greater than 0.6 (in Appendix M). When Item Two was removed from the analysis the total variance explained by the remaining items increased to 57.12%. In addition, the removal of Item Two also resulted in positive CFA scores which demonstrated a good fit between the observed data and the Default Model (NFI=.970, TLI=.965, CFI=.979, GFI=.978, SRMR=.0294, RMSEA=.072). Consequently, Item Two was deleted from the Team Learning instrument and was not included in the main analysis.

The three other dependent variables, Task Interdependence, Team Commitment and Thriving, were also analysed using PCA and CFA. In all three cases, PCA results revealed the presence of one factor with eigenvalues exceeding one and explaining 72.51%, 69.26% and 73.33% of the variance respectively. In addition, an inspection of the scree plots illustrated unambiguous inflexions that justified retaining one factor only. In the case of Task Interdependence and Team Commitment, these findings supported the findings of Pearce and Gregersen (1991) and that of Bishop and Scott (2000). However, this was not the case for the Thriving instrument whose authors (Porath et al. 2012) maintained the supposition that Thriving was a two-dimensional concept that included both Vitality and Learning. Current findings do not support that structure as eigenvalues and the associated scree plot clearly demonstrate one component that represents 73.33% of the variance. In addition, the eight items demonstrate very strong factor loadings on one component with all values exceeding 0.77 (Appendix M).
The factor structures illustrated in each of the PCA results for Task Interdependence, Team Commitment and Thriving (Appendix M), were further analysed using a first order confirmatory factor analysis (CFA) with SPSS AMOS Version 23. Each of the items found in Task Interdependence, Team Commitment and Thriving were hypothesised to load on a single factor within each instrument. These were then assessed with fit indices that reflect and measure the overall adequacy of the hypothesised models in Table 5-8. These indices included absolute measures (e.g. Chi-square and Root Mean Square Residual), Incremental (e.g. Normed Fit Index, Tucker-Lewis Index and Goodness-of-Fit-Index) and non-centrality parameters (e.g. Root Mean- Square Error of Approximation).

With few exceptions, the hypothesised first order, single factor structures for Task Interdependence, Thriving, Team Commitment and Team Learning Behaviours, demonstrated goodness of fit indices that suggested acceptable fit to the sample data in Table 5-8. The Chi-square and Root Mean-Square Error of Approximation (RMSEA) results were the exemptions to these findings with values failing to meet the $p > 0.05$ and .08-.10 cut-offs respectively. These two statistics consistently showed poor model fit across both the independent and dependent instruments in Table 5-8. However, experts have suggested that researchers should be cautious about rejecting hypothesised models based upon the fixed cut-offs for both the Chi-square and RMSEA indices (Byrne 2001, Hooper, Coughlan & Mullen 2008, Lei & Wu 2007, Pedhazur & Schmelkin 1991). According to these researchers, Chi-square is affected by the distribution of variables and is sensitive to sample size, with larger samples (>200) usually being rejected. That is, the model may fit the data reasonably well, but the Chi-square test may reject the model because of the large sample size (Lei & Wu 2007). Furthermore, RMSEA, while also impacted by sample size, is also dependent upon model specifications and degrees of freedom (Chen et al. 2008). Given that the other statistics for fit indices were all within the acceptable range, it was concluded that the single factor models for Task Interdependence, Thriving, Team Commitment and Team Learning successfully represented the sample data.
### Table 5-8: Summary of the Fit Indices for Dependent and Independent variables

<table>
<thead>
<tr>
<th>Fit Indices</th>
<th>Recommended Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Team Interdependence</td>
</tr>
<tr>
<td></td>
<td>Default Model</td>
</tr>
<tr>
<td>n</td>
<td>427</td>
</tr>
<tr>
<td>df</td>
<td>5</td>
</tr>
<tr>
<td>CMIN; χ², (χ²/df) p=</td>
<td>108.00/21.60** <em>/.000</em>**</td>
</tr>
<tr>
<td>NFI &gt; 0.95 (b)</td>
<td>0.92**</td>
</tr>
<tr>
<td>TLI &gt; 0.95 (c)</td>
<td>0.85***</td>
</tr>
<tr>
<td>CFI &gt; 0.95 (d)</td>
<td>0.93**</td>
</tr>
<tr>
<td>GFI &gt; 0.95 (e)</td>
<td>0.91**</td>
</tr>
<tr>
<td>SRMR &lt; 0.08 (f)</td>
<td>0.05*</td>
</tr>
<tr>
<td>RMSEA* &lt;.08 shows good fit while .08-.10 displays mediocre fit (g)</td>
<td>0.22*** (90% CI=.18,.26)</td>
</tr>
</tbody>
</table>

Note: χ²=Chi-square; (χ²/df) = Normed Chi-Square; NFI=Normed Fit Index; TLI= Tucker-Lewis Index; CFI = Comparative Fit Index; RMR=Root Mean Square Residual; GFI=Goodness-of-Fit Index; RMSEA = Root Mean-Square Error of Approximation; SRMR = Standardised Root Mean Square

Reference; (a) Hooper, Coughlan & Mullen 2008; Schreiber et al. 2006) (b) (c.) (d) (e.) (f) (Hooper, Coughlan & Mullen 2008; Schreiber et al. 2006) (g) (MacCallum, Browne & Sugawara 1996)

*=good fit, **=mediocre fit, ***=poor fit

### 5.2.4 Factor Structure; Independent Variable

The second application of both PCA and CFA explored the multidimensionality of Rafferty and Griffin’s (2004) theoretical four factor Transformational Leadership construct. This analysis followed earlier findings obtained from the PCA of data taken from 163 respondents in the pilot study. While these results illustrated the formation of three subdimensions, this was not replicated in the analysis of the larger data set of 371 respondents used in the main analysis.

A principal component analysis (PCA) was conducted using the main body of data. The PCA explored the hypothesised factor structures and four subdimensions identified by Rafferty and Griffin’s (2004) Transformational Leadership instrument. The PCA was undertaken on the 12 items included in the instrument with oblique rotation (direct oblimin). The Kaiser-Meyer-Olkin (KMO) measure verified the factorability of the data with a KMO value of 0.939 being well above the acceptable limit of .6 (Hutcheson & Sofroniou 1999). This
combined with a statistically significant Bartlett’s Test of Sphericity (Bartlett 1954) supported the adequacy of this data for a PCA.

An initial analysis of the data revealed eigenvalues for each factor (Appendix M). Two factors had eigenvalues over Kaiser’s criterion of one and these combined to explain 74.5% of the variance (Appendix M). The associated scree plot showed a clear inflexion that justified retaining two factors only. The Pattern Matrix illustrating the factor loadings after rotation is also shown in Appendix M. Those items that clustered on the same components suggested that factor one represents transformational empowerment (support, personal recognition and inspiring communication), while factor two embodied intellectual stimulation. Both these factors had high reliabilities with Cronbach Alpha scores of 0.938 and 0.921 respectively.

To ensure the robustness of this two-factor model, a first order confirmatory factor analysis was used to assess how well the model fitted the observed data. To verify the adequacy of this model a variety of indices were calculated. Overall the two-factor model exhibited good fit (NFI=.953, TLI=.950, CFI=.964, GFI=.919, SRMR=.0410). Again, however, the Chi-square result demonstrated significant values ($\chi^2$/df=189.38/4.02/p=.000). This is consistent with earlier findings and is considered a typical anomaly primarily caused by large sample size (Byrne 2001). Therefore, despite the negative Chi-square results, the remaining fit indices that emerged (Table 5-8) are interpreted as supporting the adequacy of this two-factor model. In addition, the standardised loadings shown in Appendix M illustrated that all items loaded well on the two first order factors with values ranging from a low of 0.74 to a high of 0.89. These findings confirmed that each of the components was well defined by its items with all loadings exceeding 0.60 and differing reliably from zero ($p < .05$). In summary, both the positive fit indices and the robust and significant factor loadings provide good support for a two-factor model and provide an alternative view of the dimensionality of Rafferty and Griffin’s (2004) measure of Transformational Leadership.

5.2.5 Data Aggregation

Because this research is at a team level, and several variables have been analysed at an individual level by team members, it was important to address the assessment of inter-rater agreement (IRA). The value of IRA is that it facilitates the identification of groups of respondents who are either high or low in agreement (O’Neill 2017). This statistic can assist in determining the appropriateness of averaging individual survey responses to a group level (van Mierlo et al. 2009).

One of the more reliable and frequently used statistics that facilitates an understanding of IRA is the average deviation index (AD) (Burke & Dunlap, 2002; Burke, Finkelstein, & Dusig, 1999). This was used to calculate the estimated IRA for the dependent variables, task interdependence, thriving, team commitment and team learning. The average deviation index (AD) has a sound approach for determining cut-offs for practical significance (O’Neill 2017) as it attempts to control for the number of Likert response options by suggesting
A/6 (where A is the number of Likert categories). Therefore, according to Burke and Dunlap (2002), values below 1.2 are indicative of acceptable agreement for a seven-point Likert scale. The mean, standard deviation and variance for all AD scores across all teams are shown below in Table 5-9. While most groups demonstrated scores below the 1.2 standard, there were seven teams that did not meet that criteria in response to the items found in the Interdependence instrument (Pearce & Gregersen 1991). A potential solution that addressed those discrepancies was evaluated using a technique developed by LeBreton and Senter (2008). This solution included developing two sets of aggregate analysis; one incorporated all teams (n=76) and the other excluded those seven teams that did not demonstrate an adequate IRA-AD score. There were some limitations in evaluating these comparative statistics and these are reported in a subsequent chapter.

Table 5-9: Descriptive Statistics for AD Scores Measuring Dependent Variables Across 76 Teams

<table>
<thead>
<tr>
<th>Instrument</th>
<th>AD Mean</th>
<th>AD Standard Deviation</th>
<th>AD Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Interdependence (Pearce and Gregersen 1991)</td>
<td>0.67</td>
<td>0.39</td>
<td>0.15</td>
</tr>
<tr>
<td>Thriving (Porath et al. 2012)</td>
<td>0.63</td>
<td>0.27</td>
<td>0.07</td>
</tr>
<tr>
<td>Team Commitment (Bishop &amp; Scott 2000)</td>
<td>0.73</td>
<td>0.31</td>
<td>0.09</td>
</tr>
<tr>
<td>Team Learning (Edmondson 1999)</td>
<td>0.81</td>
<td>0.27</td>
<td>0.07</td>
</tr>
</tbody>
</table>

In addition, intra-class correlation coefficients ICC [1] and ICC [2] estimates and their 95% confident intervals were calculated using SPSS statistical package version 23 (SPSS Inc, Chicago, IL). These estimates were based on the consistency between raters using a one-way ICC [1] and two-way random-effects model ICC [2]. For ICC [2], the general recommended cut-offs appear to range from 0.50 (Koo & Li 2016) to 0.60 (Glick, 1985), below which reliability is considered poor. Alternatively scores between 0.50 and 0.75 are moderate, while those between 0.75 and 0.90 indicate good reliability (Koo & Li 2016). The results illustrated in Table 5-10 suggest that there was a high degree of reliability found between the four measures. In view of these guidelines, the values obtained can be considered acceptable, and justify individual score aggregation to the team level.

A one-way multivariate analysis of variance was also calculated using SPSS statistical package version 23 (SPSS Inc, Chicago, IL). This statistic was used to investigate the effect of different school organisational characteristics on the results. Preliminary testing demonstrated one multivariate outlier which was removed from the analysis; other results indicated no serious violations. The results for this analysis did not violate assumptions of homogeneity (Box Test-Sig. values were > .001) or equality of variance (Levene’s test Sig. values were all > .05). The results were insignificant for any differences created for the combined dependent variables ($F$ (140, 329) = 1.01, $p = .471$; Wilks’ $\Lambda = .094$; partial $\eta^2 = .287$). These insignificant estimates suggested that school differences had a low predictive association with the analysis results.
Table 5-10: Inter-class Correlation Scores for the Aggregation of Dependent, Emergent and Moderator Variables.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Intra-class Correlation</th>
<th>95% Confidence Interval Lower and Upper Limits</th>
<th>F-Test</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Interdependence (Pearce and Gregersen 1991)</td>
<td>0.89*</td>
<td>0.93**</td>
<td>9.9</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15.10</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Thriving (Porath et al. 2012)</td>
<td>0.94*</td>
<td>0.97**</td>
<td>16.1</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32.05</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Team Commitment (Bishop &amp; Scott 2000)</td>
<td>0.89*</td>
<td>0.99**</td>
<td>9.00</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>94.95</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Team Learning (Edmondson 1999)</td>
<td>0.74 *</td>
<td>0.97**</td>
<td>3.85</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>39.40</td>
<td>p &lt; .001</td>
</tr>
</tbody>
</table>

* Results for Inter-class Correlation (1)
** Results in Inter-class Correlation (2)

5.3 Results; Hypothesis testing

Six hypotheses were outlined in Chapter Three. These included the following statements:

- (H1); plural forms transformational leadership in teams are positively related to task interdependence
- (H2); plural forms of transformational leadership in teams are positively related to team learning behaviours
- (H3); plural forms of transformational leadership are positively related to team commitment
- (H4); plural forms of transformational leadership are positively related to thriving
- (H5); thriving is positively related to team learning behaviours
- (H6); thriving is positively related to team commitment

The results for each of the hierarchical multiple regression analysis are illustrated in the Participant Information Form and all are summarised in Table 5-11 to Table 5-17.

5.3.1 Diagnostic Statistics; Hierarchical Multiple Regression

Prior to conducting hierarchical multiple regression, the relevant assumptions underlying the use of this statistical technique were assessed. The first assumption concerned sample size. While there are many rules of thumb regarding sample size in regression (Field 2012) a sample size of 76 teams used in this research met Tabachnick and Fidell’s (2007) recommendations for social science research using three independent variables. Secondly, an evaluation of the normal probability plot of standardised residuals and the scatterplots of standardised residuals against standardised predicted values for each of the six-hypothesis illustrated approximate normal distribution. In addition, assumptions of linearity and homoscedasticity of residuals were also met.
Other supporting data are illustrated in Table 5-11. This includes the maximum Mahalanobis distance values. An examination of this data showed that no values exceeded the critical 16.27 cut off (Tabacknick & Fidell 2007). This combined with Cook’s Distance scores which were well below 1.00, suggested that there were no cases that had an undue influence on the results and that multivariate outliers did not create concerns with any of the regression models. Information in Table 5-11 also includes measures of collinearity specifically Tolerance and VIF (variance inflation factor) statistics. Tolerance values were all well above the critical estimate of .10. In addition, the average VIF values across all models were close to one which was well below the critical limit of 10; therefore, it was safely concluded that the data did not violate assumptions of collinearity. Finally, while it was highly unlikely that observations were related, the Durbin-Watson statistics was calculated and shown in Table 5-11. This test evaluated the assumptions of independence of observations. For this test Field (2012) recommended that results between 1.5 and 2.5 indicate independence of residuals, while scores below one and above three are of concern. An examination of the results in Table 5-11 illustrates values ranging between 2.205 and 1.55. This showed that there was an independence of residuals for all regression models as assessed by the Durbin-Watson statistic. In conclusion these results suggest that the data did not violate the key assumptions of normality, linearity, multicollinearity and homoscedasticity.
### Table 5-11: Diagnostic Statistics for Multiple Hierarchical Regressions Models

<table>
<thead>
<tr>
<th></th>
<th>Outliers</th>
<th>Collinearity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mahal Dist*</td>
<td>Cook's Dist**</td>
</tr>
<tr>
<td><strong>Hypothesis 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TFL Density</td>
<td>14.70</td>
<td>0.29</td>
</tr>
<tr>
<td>TFL Distribution</td>
<td>13.85</td>
<td>0.31</td>
</tr>
<tr>
<td>TFL Reciprocity</td>
<td>14.11</td>
<td>0.28</td>
</tr>
<tr>
<td><strong>Hypothesis 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TFL Density</td>
<td>14.70</td>
<td>0.18</td>
</tr>
<tr>
<td>TFL Distribution</td>
<td>13.85</td>
<td>0.23</td>
</tr>
<tr>
<td>TFL Reciprocity</td>
<td>14.11</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Hypothesis 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TFL Density</td>
<td>14.70</td>
<td>0.18</td>
</tr>
<tr>
<td>TFL Distribution</td>
<td>13.85</td>
<td>0.21</td>
</tr>
<tr>
<td>TFL Reciprocity</td>
<td>14.11</td>
<td>0.27</td>
</tr>
<tr>
<td><strong>Hypothesis 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TFL Density</td>
<td>14.70</td>
<td>0.18</td>
</tr>
<tr>
<td>TFL Distribution</td>
<td>13.85</td>
<td>0.21</td>
</tr>
<tr>
<td>TFL Reciprocity</td>
<td>14.11</td>
<td>0.29</td>
</tr>
<tr>
<td><strong>Hypothesis 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving</td>
<td>14.02</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>Hypothesis 6</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving</td>
<td>14.02</td>
<td>0.22</td>
</tr>
</tbody>
</table>

**Maximum Mahal Dist** = Mahalanobis Distance/critical value < 16.27
**Maximum Cook's Dist** = Cook's Distance/critical value < 1.00
**Tolerance** = critical value > .10
**VIF** = Variance Inflation factor/critical value < 10
**Durbin-Watson** = critical values/ 1.5-2.5

### 5.3.2 Hypothesis One to Four; Hierarchical Multiple Regression Results, Plural Transformational Leadership (IV)

The first four hypotheses examined the relationship between Plural Transformational Leadership (PTL) and the dependent variables task interdependence, learning, commitment and thriving in teams. The analysis included three measures of plural leadership; density, distribution and reciprocity. This research used hierarchical multiple regression (IBM SPSS Version 23) to assess the relationship between the density, distribution and reciprocity of PTL in teams and the dependent variables, task interdependence, team learning, commitment and thriving. In all cases the two control variables, team size and the average time team members have been
together, were included in Step One of each regression model. On no occasion did these variables independently display a significant association with any dependent variable. The results for each of the four hypotheses relating to the impact of PTL are discussed below. The first hypothesis proposed that PTL was positively related to task interdependence in teams. Using hierarchical multiple regression, the full models incorporated both control variables (Step One) and PTL (Step Two) to predict task interdependence (Appendix N). Findings which are summarised in Table 5-12 demonstrated statistically significant results for the full models that utilised measures of density ($R^2 = .267, F (3, 72) = 8.762, p < .001, \text{Adj } R^2 = .237$) and reciprocity ($R^2 = .247, F (3, 72) = 7.889, p < .001, \text{Adj } R^2 = .216$).

Table 5-12: Hypothesis One; Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to task interdependence in teams (DV; Task Interdependence)

<table>
<thead>
<tr>
<th>SNA Leadership Measures</th>
<th>$\beta$</th>
<th>Adj $R^2$</th>
<th>$(\Delta) R^2$</th>
<th>Anova</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>0.53***</td>
<td>0.24</td>
<td>0.26***</td>
<td>$F (3, 72) = 8.76, p &lt; .001$</td>
</tr>
<tr>
<td>Distribution</td>
<td>0.23</td>
<td>0.02</td>
<td>0.05</td>
<td>$F (3, 72) = 1.56, p &gt; .05$</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.52***</td>
<td>0.22</td>
<td>0.24***</td>
<td>$F (3, 72) = 7.89, p &lt; .001$</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

$\beta$=Standardised Beta values

Adj $R^2$=Adjusted $R^2$; $(\Delta) R^2$ = additional variance in DV

Anova=Analysis of Variance

However, results for the hierarchical multiple regression using the PTL distribution measure were inconclusive ($R^2 = .061, F (3, 72) = 1.562, p > .05, \text{Adj } R^2 = .022$). Conversely, the addition of PTL density and PTL reciprocity led to a statistically significant ($p < .001$) increase in $R^2$ of 25.7% and 23.7% respectively. These results suggested partial support for the association outlined in Hypothesis One.

The second hypothesis examined the relationship between shared TFL and team learning behaviour. This hypothesis was tested by regressing PTL onto team learning in a two-step hierarchical regression. Again, the control variables were entered in Step One and while they were not significantly related to team learning behaviours, the introduction of PTL in Step Two did display positively significant interactions for all three social network measures (Appendix O). Of the three measures, the statistically the most significant, ($R^2 = .396, F (3, 72) = 15.715, p < .001, \text{Adj } R^2 = .371$) was the full model of team size, average time together in the team and the density of PTL to predict team learning in Table 5-13.
Table 5-13: Hypothesis Two: Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to team learning behaviour (DV; Team learning behaviour)

<table>
<thead>
<tr>
<th>SNA Leadership Measures</th>
<th>β</th>
<th>Adj R²</th>
<th>(Δ) R²</th>
<th>Anova</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>0.63***</td>
<td>0.37</td>
<td>0.35***</td>
<td>F (3,72) = 15.71, p &lt; .001</td>
</tr>
<tr>
<td>Distribution</td>
<td>0.27*</td>
<td>0.07</td>
<td>0.067*</td>
<td>F (3,72) = 2.91, p &lt; .05</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.49***</td>
<td>0.22</td>
<td>0.21***</td>
<td>F (3,72) = 8.13, p &lt; .001</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

β = Standardised Beta values
Adj R² = Adjusted R²; (Δ) R² = additional variance in DV
Anova = Analysis of Variance

This was followed by the full model for measures of reciprocity ($R^2 = .253, F (3, 72) = 8.133, p < .001, Adj R^2 = .222$) and finally, distribution ($R^2 = .108, F (3, 72) = 2.911, p < .05, Adj R^2 = .071$).

After correcting $R^2$ to account for the variance attributable to PTL, the results suggested that the density, reciprocity and distribution of PTL accounted for incremental increase in $R^2$ of 35.4%, 21.1% and 6.7% respectively in team learning behaviours beyond that accounted for by the control variables in each model. These results lend support for Hypothesis Two.

Hierarchical multiple regression was again used to test the next hypothesis, which explored the association between PTL and team commitment. Team size and the average time team members had been together, were again entered as controls in Step One. These variables did not display any significant relationships with team commitment in any of the regression models. Alternatively, the results illustrated in Appendix P and Table 5-14 indicated that the density, distribution and reciprocity of PTL were strong positive predictors of team commitment ($density, R^2 = .459, F (3, 72) = 20.343, p < .001, Adj R^2 = .436$; $distribution, R^2 = .143, F (3, 72) = 3.998, p < .05, Adj R^2 = .107$; $reciprocity, R^2 = .229, F (3, 72) = 7.139, p < .001, Adj R^2 = .197$).

Table 5-14: Hypothesis Three: Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to team commitment (DV; Team Commitment)

<table>
<thead>
<tr>
<th>SNA Leadership Measures</th>
<th>β</th>
<th>Adj R²</th>
<th>(Δ) R²</th>
<th>Anova</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>0.70***</td>
<td>0.44</td>
<td>0.44***</td>
<td>F (3,72) = 20.34, p &lt; .001</td>
</tr>
<tr>
<td>Distribution</td>
<td>0.37**</td>
<td>0.11</td>
<td>0.13 **</td>
<td>F (3,72) = 4.00, p &lt; .01</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.49***</td>
<td>0.20</td>
<td>0.21***</td>
<td>F (3,72) = 7.14, p &lt; .001</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

β = Standardised Beta values
Adj R² = Adjusted R²; (Δ) R² = additional variance in DV
Anova = Analysis of Variance
In addition, each of the expressions of PTL accounted for significant variance in team commitment exceeding that accounted for by the control variables (density, \(\Delta R^2 = .442, p < .001\); reciprocity, \(\Delta R^2 = .212, p < .001\); distribution, \(\Delta R^2 = .126, p < .01\)). These results provide good support for the relationships outlined in Hypothesis Three.

The final hypothesis, Hypothesis Four, predicted that PTL would be positively related to thriving in teams. To test this hypothesis a hierarchical multiple regression was again employed with both control variables included in Step One of the model. While neither of the controls had a significant association with thriving (Appendix Q), the full models for density, distribution and reciprocity (Table 5-15) demonstrated statistically significant results (density, \(R^2 = .489, F (3, 72) = 22.997, p < .001, Adj R^2 = .468\); distribution \(R^2 = .113, F (3, 72) = 3.057, p < .05, Adj R^2 = .076\); reciprocity, \(R^2 = .252, F (3, 72) = 8.090, p < .001, Adj R^2 = .221\)) and independently displayed adjusted \(R^2\) values of .468, .076 and .221 respectively.

Table 5-15: Hypothesis Four: Hierarchical Multiple Regression Results; Plural transformational leadership is positively related to team thriving (DV; Team Thriving)

<table>
<thead>
<tr>
<th>SNA Leadership Measures</th>
<th>(\beta)</th>
<th>Adj (R^2)</th>
<th>(\Delta) (R^2)</th>
<th>Anova</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>0.73***</td>
<td>0.47</td>
<td>0.48***</td>
<td>(F (3, 72) = 23.00, p &lt; .001)</td>
</tr>
<tr>
<td>Distribution</td>
<td>0.33*</td>
<td>0.076</td>
<td>0.10*</td>
<td>(F (3, 72) = 3.06, p &lt; .05)</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.52***</td>
<td>0.22</td>
<td>0.24***</td>
<td>(F (3, 72) = 8.10, p &lt; .001)</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *\(p < .05\); **\(p < .01\); ***\(p < .001\)
\(\beta\)=Standardised Beta values
Adj \(R^2\)=Adjusted \(R^2\); \(\Delta\) \(R^2\) = additional variance in DV
Anova=Analysis of Variance

At the same time, \(R^2\) change \([(\Delta) R^2]\) results established that the density, reciprocity and distribution of PTL independently accounted for 48% \((p < .001)\), 24% \((p < .001)\) and 10% \((p < .05)\) of the variance in team thriving in each regression model. These results provided substantive support for Hypothesis Four.

5.4 Hypothesis Five and Six; the Associations Between Team Thriving, Team Learning Behaviour and Commitment

Hierarchical multiple regression was also used to assess the ability of thriving to predict levels of team learning behaviour and commitment. Again, these regression models controlled for the influence of team size and the average time team members had been together. Each of the relationships were evaluated independently and, in neither case, did any of the controls demonstrate statistical associations with the dependent variables (Appendices Q and R). Conversely, after entering thriving into these models, the \(R^2\) and Adjusted \(R^2\) values were statistically significant (team learning behaviour, \(R^2 = .612, F (3, 72) = 37.903, p < .001, Adj R^2 = .596\); team commitment, \(R^2 = .690, F (3, 72) = 53.513, p < .001, Adj R^2 = .674\)). In both cases thriving made a strong and
unique contribution to explaining the dependent variables team learning behaviour ($\beta = .759$, $p < .001$) and team commitment ($\beta = .825$, $p < .001$). Furthermore, the introduction of thriving in Step Two of each model, explained 57% and 67% of variance in the team learning behaviour and team commitment respectively (Table 5-16 and Table 5-17).

**Table 5-16: Hypothesis Five: Hierarchical Multiple Regression Results; Team thriving is positively related to team learning (DV; Team learning behaviour)**

<table>
<thead>
<tr>
<th>Team Thriving</th>
<th>$\beta$</th>
<th>Adj $R^2$</th>
<th>($\Delta$) $R^2$</th>
<th>Anova</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.76***</td>
<td>0.60</td>
<td>0.57***</td>
<td>$F (3, 72) = 37.90, p &lt; .001$</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

$\beta =$ Standardised Beta values

Adj $R^2 =$ Adjusted $R^2$; ($\Delta$) $R^2 =$ additional variance in DV

Anova = Analysis of Variance

**Table 5-17: Hypothesis Six: Hierarchical Multiple Regression Results; Team thriving is positively related to team commitment (DV; Team commitment)**

<table>
<thead>
<tr>
<th>Team Thriving</th>
<th>$\beta$</th>
<th>Adj $R^2$</th>
<th>($\Delta$) $R^2$</th>
<th>Anova</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.82***</td>
<td>0.68</td>
<td>0.67***</td>
<td>$F (3, 72) = 53.51, p &lt; .001$</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

$\beta =$ Standardised beta values

Adj $R^2 =$ Adjusted $R^2$; ($\Delta$) $R^2 =$ additional variance in DV

Anova = Analysis of Variance

Thriving made a significant and unique contribution to both team learning, and team commitment and the results of the regression models provided substantial support for Hypothesis Five and Six (Appendices R and S).
6 Discussion and Conclusion

6.1 Overview

This research has defined plural leadership as an emergent team phenomenon whereby leadership influence has been shared, distributed and reciprocated among team members. While this expression of plural leadership includes elements of relational, distributed and shared leadership theory, it is important to recognise that it is also held within the crucible of team leadership scholarship and, while distinct, can be viewed as one form of team leadership research (Figure 3-1). This thesis takes a relational rather than functional view and assumes that leadership is a behaviour that occurs when individuals in a team use influence to create change. Therefore, anyone in a team may act in a leadership role when they use leadership behaviours in teams.

In this study the operationalisation of plural leadership is found within the merger of Rafferty and Griffin’s (2004) transformational instrument and the three social network measures. This work builds on a foundation of scholarship in the area of transformational leadership and team research (Burke et al. 2006; Chou et al. 2013, Chi & Huang 2014; Peltokorpi & Hasu 2014; Schippers et al. 2008; Sun, Xu & Shang 2014; Wang et al. 2011; Zhang, Cao & Tjosvold 2011) and augments a small but growing body of empirical work on shared transformational leadership (Avolio et al. 1996; Balthazard et al. 2004; Boies, Lvin & Martens 2010; Ensley, Fausing et al. 2015; Ensley, Hmieleski & Pearce 2006; Gupta, Rui & Yayla 2011; Hoch, Pearce & Welzel 2010; Ishikawa 2012; Martin et al. 2013; Nielsen & Daniels 2012; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Sivasubramaniam et al. 2002; Small & Rentsch 2010; Sun, Xu & Shang 2014; Wood 2005). The measure of transformational leadership used in this research incorporated four subdimensions developed by Rafferty and Griffin (2004). This research, along with earlier findings, demonstrated that all scales had high levels of internal consistency. The subdimensions incorporated in this study included inspirational communication, intellectual stimulation, supportive leadership and personal recognition.

This thesis research employed a social network analysis to facilitate an understanding of the structure of transformational leadership relationships expressed through the four subdimensions. The measures used to enable that understanding included “sharedness” (density), distribution (decentralisation) and mutuality (reciprocity). Findings indexed the density, decentralisation and reciprocity of transformational leadership configurations at a group level. This integrative empirical framework has captured the essence of plural forms of transformational leadership and examines the relationship between these forms and specific
proximal team level outcomes that include functional, affective, behavioural and motivational processes. The results presented in Chapter 5 provided qualified support for the four hypotheses, and it is the purpose of this chapter to elaborate on those findings.

This investigation has also explored the modelling and predictive capacity of thriving at work. This relationship was expressed in the context of two hypotheses with results providing evidence that extended and supported existing research.

6.2 Population Sample
Garnering an understanding of the relationship between the various dependent and independent variables outlined in these hypotheses was achieved by examining the responses from 428 participants in 76 teams across a diverse range of schools in several states of Australia. The anatomy of schools is often referred to as complex and dynamic (Scheerens 2012) as educational settings pursue reforms and adapt to changing technologies and varying demands from clientele. In these environments, teams and school leadership are essential in supporting the development of staff and student achievement (Leithwood et al. 2006; Nellis 2012; Somech & Drach-Zahavy 2007). Well-functioning teams are viewed as integral to reform efforts and the implementation and management of innovation (Bouwmans et al. 2017; Nellis 2012). Empirical evidence supports the idea that teamwork in schools improves teacher quality, supports teacher satisfaction and commitment and has a positive effect on student performance and school effectiveness (Drach-Zahavy & Somech, 2001; Park, Henkin & Egley 2005; Quinn & Restine 1996; Vangrieken et al. 2017). At the same time previous research has shown that school leaders, and, transformational school leadership in particular, improves teaching and student learning obliquely and most powerfully through the direct impact on teacher performance, job satisfaction, motivation, commitment, collaboration, organisational citizenship behaviours, efficacy and learning (Campo 1993; Chin 2007; Day, Harris & Hadfield 2001; Dunmay & Galand 2012; Fullan 2002; Koh, Steers & Terborg 1995; Hallinger & Heck 1996; Hendriks & Steen 2012; Lambert 1998; Leithwood, Harris & Hopkins 2008; Leithwood & Jantzi 2005; Leithwood, Steinbach & Ryan 1997; Lee & Li 2015; Nguni, Sleegers & Denessen 2006; Park, Henkin & Egley 2005; Ross & Gray 2007; Witziers, Bosker & Kruger 2003). Therefore, transformational leadership in schools is seen as oriented toward improving organisational structures, teacher cooperation, organisational cultures and processes (Kruger & Scheerens 2012).

Transformational school leadership has also been explicitly conceptualised as an organisational entity rather than the property of a single individual. In this context it is viewed as a mechanism
to engender change from bottom-up participation (Day, Harris & Hadfield 2001) and is seen as strongly entwined with both shared and distributed leadership concepts (Hallinger 2003; Kruger & Scheerens 2012). However, despite this union and conceptual orientation, it is important to recognise that within the increasingly complex environments of schools, plural leadership research has predominantly been focused upon distributed leadership. This emerges through multi-member organisational groupings and “conjoint agency, or the concertive labour performed by pluralities of interdependent organisational members” (Gronn 2002, p. 28). This leadership paradigm, which forms an important backdrop for the existing study of plural leadership in school teams, distributes leadership functions and responsibilities widely across multiple roles and participants throughout a school organisation. Some authors have extended this organisational level concept and suggested that shared leadership is an important team resource in schools which has the potential to encourage the development of high performing teams and improve student outcomes (Barnett & McCormick 2012; Edvantia 2005; Jackson 2000; Wallace 2001; Wilhelm 2010). Several of these authors also acknowledge that the quantitative verifiable merits of shared leadership in school teams remain to be seen.

Finally, it is important to also recognise that “social relationships loom large in portraits of education” (Little 2010, p. 4) and researchers have recently adopted social network techniques to better understand the processes involved in schools. This work has extended from garnering a deeper appreciation of educational change, collaboration and reform (Coburn, Choi & Mata 2010; Daly 2010; Penuel et al. 2006; Woodland, Barry & Roohr 2014) to investigating the effect of both formal and informal networks in schools and the impact on leading and managing instruction and distributed leadership processes (Penuel, Frank & Krause 2010; Spillane, Healey & Kim 2010). Those studies that have incorporated social network analysis (SNA) in an investigation of school leadership have predominately examined leadership in networks (Carter et al. 2015). This theoretical foundation emphasised the importance of individual network centrality and examined network structures to understand the leader’s influence and prominence. In contrast, an exploratory socio-graphic study conducted by Young (2015) examined shared leadership practices in middle management, senior leadership and project teams operating in two high schools in Auckland, New Zealand. Rather than examine leadership in networks his use of SNA explored leadership as networks (Carter et al. 2015); this focal point was an investigation of the patterns of leadership relationships among all members of the team. His exploratory study revealed how “the social analytical framework may be useful in furthering our understanding of shared leadership practice in schools” (Youngs 2015, p.1).
This research thesis, which has explored the impact of plural forms of transformational leadership in school teams, has built upon the existing foundation of transformational school leadership and the emerging use of SNA frameworks in schools. At the same time, it has addressed the dearth of research concerning the function and outcomes of effective team processes in schools (Scribner et al. 2007). The key findings of each of the six hypotheses, which are discussed below, have provided a unique and important application of leadership dynamics in schools. Prior to examining these research findings, it is important to consider the methodology used in this research and to examine how social network analysis was used to examine plural leadership in teams. In addition, although this study offers several contributions to research, it is not without its limitations. These are reviewed at the end of this chapter in conjunction with potential implications of this research and areas for future research in both plural leadership and thriving.

6.3 Social Network Measures

Three measures were used to examine the “sharedness” (density), distribution (decentralisation) and mutuality (reciprocity) of transformational influence in teams. Two of these measures provide a unique signature and lens into the structure of leadership in teams with density illustrating the amount of leadership being shared and decentralisation, measuring the distribution pattern of leadership influence. The combination of each is supported and recommended by various scholars including Gockel and Werth (2010), DeRue, Nahrgang and Ashford (2015), D’Innocenzo, Mathieu and Kukenberger (2014), Mayo Meindl and Pastor (2003) and Zhu et al. (2016); all of whom advocate that together they appropriately capture the operationalisation of plural leadership in teams.

Predictably, those two measures presented different patterns of relationships within the data. Some of the illustrations are shown in statistical results for the ANOVA and R square change (\(\Delta R^2\)) data illustrated in Table 6-1 and Table 6-2. For example, the \(\Delta R^2\) expressed the additional variance after adjusting for the two control variables (team size and average team tenure) and explained the different representations of shared, distributed and reciprocal forms of transformational leadership in each of the dependent variables. What is immediately evident while reviewing the summary of this statistic in Table 6-1 and Table 6-2 is that the distribution, or decentralisation measure of transformational leadership behaviours in teams, while displaying statistical significance in some cases, provided the weakest explanatory measure with values ranging from approximately 7% (p < .05) to 13% (p < .001).
This measure can be used to align conceptual and operational definitions of different forms of plural leadership because it specifically assesses distribution. The higher the level of dispersion of leadership behaviours among team members the less hierarchy and the greater the level of distributed leadership. In general, measures that expressed the decentralisation of transformational leadership behaviours in teams were relatively poor predictors of the various dependent variables examined in hypotheses one to four (Table 6-2).

There is a dearth of research that specifically examines both the density and distribution of leadership in teams and the results that do exist are inconclusive. On the one hand, D’Innocenzo, Mathieu and Kukenberger (2016) in a meta-analysis of existing shared leadership research, compared the relative effect sizes of density and centralisation measures and concluded that the effect sizes did not differ significantly from one another. In a similar vein, work undertaken by Wu and Cormican (2016), which explored the relationship between shared leadership and team creativity, also illustrated some parity between density and centralisation measures. Their analysis explored the negative relationship between the centralisation of shared leadership on team creativity, rather than the positive association of decentralised patterns.

Findings demonstrated that centralised shared leadership practices exerted a negative influence on team creativity and that dense shared leadership networks were positively related. While both the density and the centralisation results reported by Wu and Cormican (2016) support the original hypothesis, with each showing statistically significant scores, it is interesting to note the difference in strength of each, with density results illustrating a stronger relationship ($\beta=.63; p<.01$) than network centralisation ($\beta= -.38; p<.05$). The disparity between these network measures was also emphasised in the empirical work of Ramthun (2013).
He utilised SNA as part of a mixed methods approach to understand the dynamics of shared leadership in dangerous military environments. Results emphasised that military teams operating in simulated dangerous environments achieved higher levels of performance by sharing leadership. However, findings also illustrated that the “SNA density measure of shared leadership was a better predictor of team performance than centralization or the interaction of density and centralization” (Ramthun 2013, p. 80). Interestingly, at the same time, other authors like Chiu, Owens and Tesluk (2016), Nicolaides et al. (2014) and Carson et al. (2007) preferred density measures over centralisation results because they believed that the density statistic better reflected the extent to which leadership influence was shared among team members.

### Table 6-1: Comparison of SNA Measures-Anova Significance Levels

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Anova- Significance Levels</th>
<th>Density</th>
<th>Distribution</th>
<th>Reciprocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Plural forms of transformational leadership are positively related to task interdependence in teams</td>
<td></td>
<td>p &lt; .001</td>
<td>p &gt; .05</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>2. Plural forms of transformational leadership are positively related to team learning behaviours</td>
<td></td>
<td>p &lt; .001</td>
<td>p &lt; .05</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>3. Plural forms of transformational leadership are positively related to team commitment</td>
<td></td>
<td>p &lt; .001</td>
<td>p &lt; .01</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>4. Plural forms of transformational leadership are positively related to team thriving</td>
<td></td>
<td>p &lt; .001</td>
<td>p &lt; .05</td>
<td>p &lt; .001</td>
</tr>
</tbody>
</table>

### Table 6-2: Comparison of SNA Measures-Additional Variance in the Dependent Variable and Levels of Significance

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>(Δ) R² and significance Levels</th>
<th>Density</th>
<th>Distribution</th>
<th>Reciprocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Plural forms of transformational leadership are positively related to task interdependence in teams</td>
<td>.257***</td>
<td>0.05</td>
<td>.237***</td>
<td></td>
</tr>
<tr>
<td>2. Plural forms of transformational leadership are positively related to team learning behaviours</td>
<td>.354***</td>
<td>.067*</td>
<td>.211***</td>
<td></td>
</tr>
<tr>
<td>3. Plural forms of transformational leadership are positively related to team commitment</td>
<td>.442***</td>
<td>.126 **</td>
<td>.212***</td>
<td></td>
</tr>
<tr>
<td>4. Plural forms of transformational leadership are positively related to team thriving</td>
<td>.480***</td>
<td>.103*</td>
<td>.242***</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001
Within the growing body of plural leadership research, there is only one empirical study that has used a taxonomy of leadership behaviours to examine the distribution (decentralisation) of leadership within teams and team level outcomes. The study by Small and Rentsch (2010) utilised an instrument developed by Yukl (2002) which incorporated elements of earlier transformational leadership questionnaires. Findings illustrated that not only was it appropriate to use SNA as a tool for studying plural leadership, but that distributed leadership in teams measured, as the decentralisation of specific leadership behaviours and roles, was also related to team performance outcomes.

In summary, research that has explored the relationship between distributed leadership in teams, using the SNA measure of decentralisation, have shown mixed and inconsistent relationships with both team performance outcomes and team processes (D’Innocenzo, Mathieu & Kukenberger 2016; Ramthun 2013; Wu & Cormican 2016). In keeping with some of this earlier research, the results shown in this study, demonstrate relatively weak relationships between the distribution or decentralisation of leadership in teams and specific team processes. At the same time, some of these findings did display statistically significant results with the decentralised form of plural transformational leadership being positively related to team learning behaviour (p < .05), commitment (p < .01) and thriving (p < .05).

The amount of leadership exhibited (density) is distinct from how that leadership is configured or distributed across group members (decentralisation). In contrast to the decentralisation statistics, the density figures in this research demonstrated consistently significant and relatively robust relationships with each dependent variable in the study (Table 6-1 and Table 6-2). Density in a leadership network describes the dyadic exchanges or ties that develop between team members and these one-to-one relationships combine to form a team’s leadership network (Carson et al 2007; D’Innocenzo, Mathieu & Kukenberger 2016). This has been described as leadership “sharedness” (Day, Gronn & Salas 2004; Mendez 2009; Wang, Waldman & Zhang 2013). When a great number of team members demonstrated transformational leadership behaviours, more leadership ties emerged which resulted in a higher network density score (Wu & Cormican 2016). A dense transformational network is therefore a function of the ability, willingness, opportunity and motivation of team members to demonstrate transformational leadership behaviours and the degree to which those acts are affirmed, reinforced and afforded by others as leadership in the group (De Rue, Nahrgang & Ashford 2018). Researchers who have utilised transformational leadership instruments have aggregated individual results to a team level to explore the “sharedness” of transformational behaviours (Avolio et al. 1996, Ensley, Hmielski & Pearce 2006; Pearce & Sims 2002; Pearce, Yoo & Alavi...
While network density is viewed as providing a richer and more informative measure of shared leadership than the aggregation studies (D’Innocenzo, Mathieu & Kukenberger 2016), this research is the first to evaluate shared transformational leadership influence in teams using network density measures.

The final SNA measure used in this research has extended the foundation of dyadic leadership relations expressed in the density of team member ties, to then examine the recursive leader-follower “double-interact” (DeRue 2011). This notion broadens the concept of the leadership dyad expressed within relational leadership theory and emphasised in empirical work around leader-member-exchange. A double interact implies that the leadership behaviours of one team member are contingent upon, as well as influenced by, the behaviours of other team members (Carter et al. 2015). This bi-directional interaction is represented in SNA as reciprocity (White, Currie & Lockett 2014) and is measured by evaluating the number of ties that have reciprocated relationships relative to the total number of relational ties within the network. The extent to which a team is characterised by reciprocated ties tells much about the degree of leadership cohesion. A team that has a high number of reciprocated ties is considered a more stable and balanced network than one characterised as having only one-way influences (Hanneman & Riddle 2011). Greater reciprocal influence between peers is also viewed as an enabler of higher levels of shared leadership effectiveness (Muethel & Hoegl 2012) and an indicator of high-quality leadership relationships (Dabos & Rousseau 2004; Gobel, Vogel & Weber 2013; Muethel & Hoegl 2012; Settoon, Bennett & Liden 1996).

Reciprocity is well recognised in the academic literature (Uhl-Bien & Maslyn 2003) and there are numerous studies around organisational research that demonstrate that reciprocity plays a leading role in governing interaction within organisations (Gobel 2013). Findings from this empirical work have shown that reciprocity is an important mechanism in bringing about cooperation, trust, knowledge sharing, conjoint agency and organisational citizenship behaviours (Deckop, Cirka & Andersson 2003; Endres & Chowdhury 2013; Gronn 2002; Koster & Sanders 2006; Sanders & Schyns 2006). These studies show a strong support for the role of reciprocity in relationship development and maintenance. This association is also evident within a small body of leadership research which focuses on leader-member exchange (LMX) and transformational leadership styles. These investigations demonstrated that reciprocal behaviours were positively related to the quality of leader/subordinate relationships and LMX dimensions were strongly associated with subordinate feelings of reciprocity (Dierendonck, Le Blanc & Breukelen 2002; Uhl-Bien & Maslyn 2003). In addition, other empirical research
undertaken by Jia et al. (2007) found that reciprocity played an important mediating role between transformational leadership and organisational trust.

Existing research has highlighted the importance of reciprocity as a driver of both horizontal peer to peer and vertical leader to follower relationships among organisational members. In these cases, reciprocity is fundamentally a relational construct. This research extends the existing body of work in both management and leadership research by recognising that reciprocity is an important characteristic of plural leadership relationships at team level. The current research findings illustrate the importance of reciprocal transformational influence in teams and the impact of those relationships on team level phenomenon.

6.4 Key Findings; Plural Forms of Transformational Leadership in Teams.

One of the intentions of this research was to explore the relationship between plural forms of transformational leadership in teams and several team level dependent variables; task interdependence, team learning behaviour, team commitment and thriving. In this study the operationalisation of plural leadership is found within the merger of Rafferty and Griffin’s (2004) transformational instrument and the three SNA measures. The general proposition is that, in combination the specific dimensions of plural transformational leadership behaviours, that is inspirational communication, intellectual stimulation, supportive leadership and personal recognition, together are positively and significantly related to key team level outcomes that constructively impact interpersonal group processes. Findings of hierarchical multiple regression emerged as a consistent theme from the analysis of these results; each investigation controlled for the influence of both team size and average team tenure and each enquiry consistently demonstrated that two SNA measures, density and reciprocity predicted each dependent variable (Table 6-1 and Table 6-2). In contrast, the results for leadership distribution (decentralisation) illustrated greater variability and revealed weaker predictive ties with each dependent variable. The results for each of the four hypotheses specific to this aspect of the study are discussed below.

6.4.1 Task Interdependence

Task interdependence features prominently in team research and in empirical work in the areas of relational, distributed, shared and team leadership. Task interdependence is a centre piece of various definitions of work teams (Kozlowski & Bell 2003; Mathieu et al. 2008) and is considered essential to researching team phenomenon (Kozlowski 2001).

This research examined the relationship between shared, distributed and reciprocal transformational leadership behaviours and task interdependence in teams. Previous research
has demonstrated that transformational leadership practices positively and directly influence teachers’ perceptions of task interdependence. In particular, two sub-dimensions of transformational leadership, in the form of individualised consideration and intellectual stimulation, were found to positively affect task interdependence (Beverborg et al. 2015). At the same time, collective transformational leadership behaviours have been shown to promote a positive team climate (Sun, Xu & Shang 2014), group potency (Boies, Lvina & Martens 2010; Sivasubramaniam et al. 2002) and trust (Boies, Lvina & Martens 2010). Together this suggests that when teachers feel supported by transformational leadership behaviours, they also feel empowered to interact with other team members to complete tasks and engage interdependently (Beverborg et al. 2015). Consequently, it is important that more team members display transformational leadership in teams by demonstrating consideration for the needs and feelings of others in the group while also challenging them to think about existing problems in new ways.

These relationships were partially supported by the results of the multiple hierarchical regression. The decentralisation of transformational leadership, expressed as a collective measure of inspirational communication, intellectual stimulation, supportive leadership and personal recognition, did not predict task interdependence. While the distribution had no significant impact, the density or “sharedness” and reciprocity of transformational leadership behaviours in teams did and explained 25.7% and 23.7% respectively. While both these variables made a significant contribution toward explaining the variance in task interdependence, together the three SNA measures demonstrated relationships that were relatively weak.

These results, overall, may be attributed to the way tasks are functionally addressed and completed in various school teams. In some cases, interdependence may not be structurally incorporated into task completion and therefore not perceived and internalised by team members (Barnett & McCormick 2016). Schools may also create significant barriers to effective interdependent engagement by cultivating silos, only providing intermittent opportunities for team meetings and generating conflicting priorities. Consequently, task completion may be perceived as an individual rather than collective responsibility; alternatively, tasks may be completed by small sub-groups within a team rather than the whole team. In addition, team members may have several external linkages with whom they have compliance or reporting responsibilities, and these may further influence internal task interdependencies. Finally, task schedules in school teams are frequently episodic and cyclical, making the nature and form of
internal interdependencies dynamic, unpredictable and difficult to capture (Kozlowski & Bell 2001).

Despite these potential moderators, two of the reported results of this study suggest the number of transformational leadership relationships, and the reciprocal nature of those relationships, were positively related to task interdependencies in school teams. Alternatively, the variability or dispersion of transformational leadership relationships was not. This study provides some evidence to support the beneficial role of plural transformational leadership behaviours in teams in fostering a behavioural milieu conducive to supporting task interdependence among team members.

6.4.2 Team Learning Behaviour

The study of team learning draws on concepts and research in the areas of organisational learning, teams and team leadership. Team learning is regarded as a team-level cognitive resource that has been viewed as both a process and outcome of group interactions (Kozlowski & Ilgen 2006). As a group process, team learning behaviour is described as “an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors” (Edmondson 1999, p. 353). Conceptualising team learning behaviours in this way emphasises the relational processes of sharing and exchanging; it highlights the critical foundation of those relationships and how they can impede or facilitate learning. Team learning is described as “one of the most effective team processes through which teams are able to adapt to and improve knowledge successfully” (Koeslag-Kreunen et al. 2018, p. 476) and it is of special importance as organisations like schools meet the requirements of increasingly complex environments and knowledge work.

Workplace learning in schools has taken the form of both individual learning activities, such as personal reflection, and interpersonal learning activities, like knowledge sharing and collaboration (Scribner et al. 2007; Vangrieken et al. 2017). Results of recent research has confirmed the positive effect of collaboration as one of the key dimensions of teacher learning (Gregory 2010; Geijsel et al. 2009; Thoonen et al. 2011; Vanblaere & Devos 2016). Studies have reported that the most common setting for collaborative learning has been within school teams and that “many teachers attributed learning new skills to the team-oriented approach” (Gregory 2010, p. 613). At the same time, another body of research conducted by Vangrieken, Dochy & Raes (2016) has illustrated that team entitativity, defined as a feeling of being united and interdependent, is strongly predictive of team learning within school settings. These collaborative relationships within teams have provided opportunities for team members to work together to garner feedback, seek and exchange new information and problem solve.
Teamwork has provided teachers with the structural framework for enabling team learning which, in turn, has supported team innovation and educational reform (Drach-Zahavy & Somech 2001; Runhaar et al. 2013; Somech & Drach-Zahavy 2007; Wijnia et al. 2016). A range of other studies have also contributed to this stream of research by examining the effect of different variables on teacher learning. These factors have included school organisational conditions like participative decision making (Bouwmans et al. 2017), teacher motivation and psychological states, such as efficacy (Geijsel et al. 2009; Koeslag-Kreunen et al. 2018; Oude Groote Beverborg, Sleegers & van Veen 2015; Runhaar, Sanders & Yang 2010; Thoonen et al. 2011), group potency (Vangrieken, Dochy & Raes 2016), psychological safety (Gregory 2010; Koeslag-Kreunen, et al. 2018; Vangrieken, Dochy & Raes 2016) and motivation (Thoonen et al. 2011). Moreover, the results of several of these empirical studies also demonstrated that transformational leadership, exhibited by team leaders or principals, had a direct and indirectly positive association with team learning in schools (Arnoud Oude Groote et al. 2015; Bouwmans et al. 2017; Koeslag-Kreunen et al. 2018; Leithwood, Steinbach & Ryan 1997; Runhaar, Sanders & Yang 2010; Thoonen et al. 2011; Vanblaere & Devos 2016).

Other researchers have extended the work undertaken by various scholars in schools and have illustrated that both transformational and shared leadership practices have significant effects on team learning behaviours (Bouwmans et al. 2017; Bucic, Robinson & Ramburuth 2010; Chi & Huang 2014; Chiu, Lin & Chien 2009; Huang 2013; Koeslag-Kreunen et al. 2018; Liu et al. 2014; Loon et al. 2012; Petokoipi & Hasu 2015; Raes et al. 2012; Wang et al. 2017). The results of this study corroborate many of the key findings described in earlier research and support the original hypothesis that plural transformational leadership in teams, expressed as the sharing (density), distribution (decentralisation) and reciprocity of relational ties, are positively related to team learning behaviours. This conclusion is validated by the findings of three independent hierarchical multiple regression statistics which illustrated that density, reciprocity and distribution made significant and positive contributions to predict team learning behaviours with unique contributions that ranged from 35.4 %, 21.1% and 6.7% respectively.

What these results and the associated body of literature suggest is that teams form important platforms for collective learning for staff in schools. Within teams, where the density of transformational leadership is high, there will be a greater number of transformational influence exchanges occurring between members and therefore greater “sharedness” of those relational ties. At the same time, transformational leadership density has a significant predictive impact on team learning behaviour. Therefore, it is suggested that teams which display a high
density of transformational leadership ties between members will provide environments that support team learning behaviour.

Concurrently, the hierarchical multiple regression findings for (Δ) R² and the corresponding p values (Table 6-2) also demonstrated that, when transformational leadership relationships were reciprocated, they positively predicted team learning behaviours. Therefore, cohesive teams in which team members are experiencing bi-directional transformational relationships, will have a significant positive influence on team learning.

The results of the SNA distribution measure for transformational leadership provided a positive but relatively weak predictive relationship with team learning behaviour. This (Δ) R² and the corresponding p value (Table 6-2), when considered in association with the results described above, create some important questions about the nature of the plural leadership networks. Clearly the distributional properties of transformational leadership within the teams have relatively limited predictive impact on team learning.

To garner a greater understanding of why transformational leadership relationships can influence team learning behaviours it is important to review the sub-dimensions of Rafferty and Griffin’s (2004) instrument in conjunction with two SNA measures, density and reciprocity. Firstly, knowledge sharing is recognised as an important facilitator of team learning (Endres & Chowdhury 2013). The processes and relationships adopted when engendering and supporting reciprocal transformational leadership exchange may assist to enable a platform for mutuality in teams that facilitates the sharing of knowledge and new ideas.

Secondly, team learning behaviours will be encouraged when team members participate in developing relational ties that stimulate their intellectual frameworks. Team learning will be supported when team members engage in transformational leadership behaviours that challenge the beliefs of their peers, develop each other’s “abilities to conceptualize, comprehend and analyse problems” (Rafferty & Griffin 2004, p. 333) and improve the quality of the solutions they generate.

Thirdly, when these relational ties are combined with others that engender supportive leadership practices it is probable that team learning will be further enhanced. Shared supportive leadership occurs where team members lead others by showing respect for their feelings and needs. A greater density of these leadership behaviours within a team network is likely to support important precursors for team learning behaviours such as psychological safety.
Finally, researchers have emphasised the importance of inspirational motivation as a foundation of transformational leaders’ influence on team learning (Bucic, Robinson & Ramburuth 2010). This is labelled as inspirational communication by Rafferty and Griffin (2010) and is described as the “use of oral communication to motivate and arouse followers’ emotions” (p. 332). By inspiring and motivating others, transformational leaders in teams encourage team members to link their self-concepts to the collective interest of the group and work together. This increases their motivation to work collectively to combine and exchange information and enhances their belief in seeing these processes as valuable (Shamir, House & Arthur 1993).

Together the three dimensions of inspirational communication, supportive leadership and intellectual stimulation reference empowering behaviours that explicitly aim to stimulate interactions in teams. These behaviours support the creation of learning relationships in teams and the greater density and reciprocity of those transformational leadership behaviours stimulates team development in the form of team learning behaviours. Learning is vital to leadership when leadership is viewed as a plural relational process and practice. As team members engage in learning with each other, they demonstrate a commitment to reflect on their individual and concertive actions (Gronn 2002) and are better able to reconstruct their activities on behalf of their mutual interest.

### 6.4.3 Team Commitment

The third hypothesis examined the relationship between three different forms of plural transformational leadership in teams and team commitment. The three different forms examined the density of leadership ties, the pattern of distribution or decentralisation, and the reciprocal nature of those ties. Results affirmed that plural transformational leadership in teams, as measured using all three forms, positively and significantly predicted team commitment.

This research utilised seven items from Bishop and Scott’s (2000) team commitment instrument. Commitment has been viewed as a “multi-foci phenomenon” (Bishop & Scott 2000, p. 448) and in the sphere of educational research it has been analysed from various perspectives including the teacher’s commitment to organisation, profession or student learning. Team commitment has drawn limited attention in the field of educational research, but it has garnered greater support in the broader area of organisational scholarship. Here team commitment has been identified by scholars as an independent construct that refers to the
psychological attachment that group members feel toward their team at work (Bishop & Scott 2000). Team commitment is a focal point of both team and team leadership scholarship and has been frequently regarded as either an attitudinal or motivational emergent state or outcome (Chen et al. 2011; Kirkman & Rosen 1999; Marks, Mathieu & Zaccaro 2001; Neininger et al. 2010; Park, Henkin & Egley 2005; Somech & Bogler 2002; Swailes 2002). It is perceived as an important measure of both team and team leadership effectiveness (Cohen & Bailey 1997; Johnson & Johnson 2006; Yammarino et al. 2012) and it has been associated with a diversity of team and organisational factors, such as job performance, productivity, altruism and citizenship behaviours (Bishop, Scott & Burroughs 2000; Bishop & Scott 1997; Neininger et al. 2010; Park, Henkin & Egley 2005; Pearce & Herbik 2004).

The importance of commitment has also been visible in educational research. While much of the focus has been directed toward commitment to the profession or organisation, research has drawn attention to the importance of commitment to supporting student achievement and developing teachers’ levels of satisfaction, sense of efficacy (Firestone & Pennell 1993) and organisational citizenship behaviours (Somech & Bogler 2002). At the same time, empirical study has directed attention to the importance of teachers’ commitment and the effect of a variety of organisational and individual factors. These included the quality of support received by staff, their levels of workplace autonomy and the opportunities they had been given to learn, work in teams, be challenged and be involved in decision making in the school (Dee, Henkin & Singleton 2006; Firestone & Pennell 1993; Kushman 1992; Hulpia & Devos 2010; Somech & Bogler 2002). Individual employee factors have also been found to influence commitment; these included both self-efficacy and learning and development (Chesnut & Burley 2015; Kushman 1992).

The activities of school leaders have also been shown to be a powerful influence on teacher commitment (Le Blanc & Gonzáles-Romá 2012). Studies in education have provided consistent evidence of both the indirect and direct positive effects of the transformational leadership behaviours of formal school leaders on teacher commitment (Chin 2007; Hallinger 2003; Koh, Steers & Terborg 1995; Leithwood & Jantzi 1999; Leithwood & Jantzi 2005; Leithwood & Sleegers 2006; Leithwood & Sun 2012; Nguni, Sleegers & Denessen 2007; Ross 2007). These results echo the general findings in organisational scholarship which indicate that transformational leadership behaviours play a particularly effective role in enabling both organisational and team commitment outcomes (Arnold, Barling & Kelloway 2001; Bass et al. 2003; Lehmann-Willenbrock 2015; Lim & Ployhart 2004; Paolucci et al. 2018, Podsakoff, Mackenzie & Bommer 1996; Schlechter & Strauss 2008; Strauss, Griffin & Rafferty 2009).

While there have been no studies in educational scholarship that have specifically addressed the relationship between plural leadership in teams and team commitment, there are three bodies of work that elicit some suggestion as to how those relationships might appear within an educational context. Firstly, research findings indicated that teamwork was a significant predictor of teacher team commitment. Those teachers who provided higher ratings for team commitment also displayed more teamwork (Park, Henkin & Egley 2005). In addition, further tests undertaken by Park, Henkin and Egley (2005) also revealed that team leadership was a significant predictor of team commitment.

The importance of leadership was similarly highlighted by Hulpia, Devos and Van Keer (2011). In contrast to the findings of Park, Henkin & Egley (2005), this study emphasised that teachers’ commitment was most significantly related to the quality of leadership relationships but not the source of those relationships. For example, the influence of teacher leaders who were closest to the teachers was not stronger than that of principals. Alternatively, principals did not appear to have a greater or more decisive impact on teacher commitment than other members of the team. The authors concluded that teachers who experienced distributed leadership in schools in which there was reciprocal influence, conjoint agency and collaboration felt a greater sense of commitment (Hulpia, Devos & Van Keer 2011). While the quality of those relationships was a significant predictor, the source of that leadership support was less important.

These results also highlighted the extent to which teachers influence in school decision making affected their levels of commitment (Hulpia, Devos & Van Keer 2011). This participation-commitment relationship was also emphasised by Kushman (1992) and Pounder (1999). These authors reported that teachers’ organisational commitment flowed from their opportunity to contribute together as a team, collaborate as leaders and maintain a sense of control over both the teaching process and the managerial domain (Kushman 1992; Pounder 1999).

On balance, these results, when combined with earlier research, suggest that leadership in schools, whatever its source, is a critical driver of commitment. Furthermore, teams are important structures in enabling commitment to emerge especially when teachers have an
opportunity to contribute and collaborate. Finally, the quality of leadership relationships, especially transformational leadership ties, have the potential to affect teacher commitment.

Transformational leadership theory claims that a relatively small number of leadership behaviours or practices can increase the commitment of organisational members (Leithwood & Sun 2012). These behaviours are expressed in the sub-dimensions in Rafferty and Griffin’s (2004) transformational leadership instrument. The four-factor leadership model used in this research has included inspirational communication, intellectual stimulation, supportive leadership and personal recognition. These factors are recognised as having the potential to support different expressions of employee commitment and researchers have found that all sub-dimensions of this instrument are clearly associated with affective commitment (Rafferty & Griffin 2004).

The results of this research support those earlier findings. Dense transformational leadership structures in teams in which there are more transformational leadership behaviours are strongly and positively associated with team commitment. This strong association emerges when plural leadership behaviours in teams demonstrates transformational ties that incorporate expressions of concern for team members (supportive leadership), build confidence and motivation (inspirational communication) together with praise and acknowledgement (personal recognition) and intellectual stimulation.

Not only does the volume or “sharedness” of these behavioural ties matter in teams, but so does the reciprocity (mutuality) and distribution (decentralisation) of those ties. Few studies have explained the influencing process of transformational leadership in teams from the perspective of reciprocity. Reciprocity illustrates balanced leadership ties in which there is a simultaneous exchange of equivalent behaviours over time. Team networks that display more reciprocated ties over asymmetrical relationships are described as more equal, stable and cohesive (Hanneman & Riddle 2011). When team members have established balanced reciprocal leadership relationships, they can each be expected to benefit from the social resources and exchanges derived from being a member of the team network. These empowering behaviours are expressed as personal recognition, inspirational communication, intellectual stimulation and supportive leadership and, when displayed in team processes, they “may evoke an obligation to reciprocate the rewarding behaviours of one’s exchange partner” (Nielsen & Daniels 2012, p.385). The importance of these empowering reciprocal dynamics in teams are expressed in hierarchical multiple regression findings which show (Δ) $R^2$ of .212 and corresponding $p$ values of $p < .001$ (Table 6-2). These results clearly demonstrated that when personal recognition, inspirational communication, intellectual stimulation and supportive
leadership behaviours were reciprocated they significantly and positively predicted team commitment.

Finally, distribution figures explain the decentralisation of transformational leadership behaviours in teams where multiple individuals are contributing to the leadership network. Teams in which leadership behaviours are distributed are expected to experience increased coordination, collaboration, and commitment (Ensley, Pearson & Pearce 2003; Small and Rentsch 2010). The hierarchical multiple regression results for Hypothesis Three (Table 6-1 and Table 6-2) demonstrated that when personal recognition, inspirational communication, intellectual stimulation and supportive leadership behaviours displayed decentralised network patterns these significantly $(p < .01)$ and positively predicted $(\Delta R^2 = .126)$ team commitment. This suggests that when more people in a team are displaying transformational leadership behaviours and there is less focus on one central figure providing these behaviours, then this pattern of transformational leadership will have a positive and significant relationship with team commitment.

These results extend some of the existing work in organisational scholarship, and particularly in the field of educational research. Teams are important mechanisms from which commitment may emerge. At the same time, transformational leadership behaviours that display plural patterns in the form of reciprocated, distributed and shared ties are networks that demonstrate significant relationships with teacher commitment. These expressions of concertive action (Gronn 2002) and “leaderful” practice Raelin (2011) are important mechanisms through which teacher commitment can be enhanced in schools.

6.4.4 Thriving at work

Thriving at work is a positive psychological state which has garnered recent attention in organisational psychology and behavioural science. Thriving has been distinguished from associated constructs in positive organisational scholarship such as resilience, flourishing, flow, subjective well-being, and self-actualisation (Boyd 2015; Niessen, Sonnentag & Sach 2012; Spreitzer et al., 2005) and affective states such as motivation and work engagement (Carmeli & Spreitzer 2009; Spreitzer, Lam & Fritz, 2010). It is considered an important component of psychological growth at work (Spreitzer & Porath 2014) and is conceptualised as a joint experience of individual learning and vitality (Spreitzer et al. 2005). As markers of thriving, these two components are viewed as both the affective (vitality) and cognitive (learning) dimensions of the psychological experience of personal growth. An important premise of this construct is that thriving is socially embedded and that certain work contexts are more likely to enable the emergence of thriving. Recent evidence suggests that thriving at work has several positive
individual and organisational outcomes. These include improved innovative work behaviours, career adaptability, job performance, self-development and physical health (Carmeli & Spreitzer 2009; Jiang 2016; Paterson, Luthans & Jeung 2014; Porath et al. 2012; Spreitzer, Porath & Gibson 2012; Wallace et al. 2013). Unsurprisingly scholars point to the need to better understand these and other factors that promote thriving at work (Paterson, Luthans & Jeung 2014). This research views thriving as a team level resource that may assist our understanding of how team members can combine their affective and cognitive resources to improve team effectiveness. This work has specifically endeavoured to explore the link between different forms of plural transformational leadership behaviours and thriving in teams as a dependent variable.

The theoretical foundation for thriving comprises two dimensions; “unit contextual features” and “individual agentic behaviours” (Sprietzer et al. 2005, p. 540). The former establishes a platform for agentic behaviours and these unit contexts include a climate of trust and respect, broad information sharing and decision-making discretion. These “work unit contexts and resources produced in the doing of work affect the individual through situational mechanisms” (Sprietzer et al. 2005, p. 540). The “engine of the thriving process” (Sprietzer et al. 2005, p. 538) are three “agentic behaviours” that include task focus, heedful relating and exploration. Two of these agentic behaviours, heedful relating and exploration, are likely to be influenced by team-unit contextual features in the form of plural transformational leadership.

Results from this research support the contention that plural transformational relationships in teams are positively and significantly associated with thriving in teams and, therefore, play an important role in ensuring psychological growth. This is expressed in a series of multiple hierarchical regression results (Table 6-1 and Table 6-2) which demonstrate that the density, reciprocity and distribution of transformational leadership ties made significant and positive contributions to predict thriving at a team level with unique contributions ranging from 48%, 24% and 10% respectively.

This association between plural forms of transformational leadership and thriving can best be explained by examining the potential relationships between specific sub-dimensions of transformational leadership and the two agentic behaviours, heedful relating and exploration. When individuals relate heedfully, they are “more able and likely to help others and provide social support” which promotes their vitality (Spreitzer et al. 2005, p. 541). Moreover, heedful relating is also seen as promoting a sense of learning; as team members attend to what their colleagues are doing, they are likely to learn from the strategies and approaches used by them. Learning is also supported through the second agentic behaviour, exploration. As individuals
explore new ideas and strategies, they increase their knowledge and skills. At the same time, through their exploration of new ways of working, they are likely to “pique their curiosity” and this may result in a feeling of energy and vitality (Spreitzer et al. 2005, p. 541).

While Spreitzer et al. (2005) have highlighted the importance of unit contextual features such as information sharing and a climate of trust in facilitating agentic behaviours, it is apparent that plural transformational leadership behaviours may also play a role in the “socially embedded model of thriving at work” (Spreitzer et al. 2005, p. 537). Specific sub-dimensions such as supportive leadership, intellectual stimulation and inspirational leadership are likely to provide social and relational “structural enablers of thriving” (Spreitzer et al. 2005, p. 541).

In this research the density of transformational leadership ties between team members was shown to be a particularly efficacious enabler of thriving at work. This was expressed in hierarchical multiple regressions statistics that demonstrated that dense network patterns significantly (p < .01) and positively predicted (\(\Delta R^2 = .48\)) team thriving. This supports the original hypothesis and demonstrates that the overall quantity of transformational leadership in teams is related to thriving at work. In addition, group cohesion as measured by the ratio of reciprocal leadership ties in teams, also displayed a strong positive and significant relationship with team thriving (Table 6-1 and Table 6-2). This suggests that the mutuality of transformational leadership ties is also an important enabler with multiple regression findings for (\(\Delta R^2 = .242\)) and the corresponding p values (p < .001) (Table 6-2) together illustrating a strong positive and significant relationship to thriving. In addition, the distribution or decentralisation of those leadership ties in teams, while not displaying the same strength of association as other measures (\(\Delta R^2 = .103\)), has also been shown to have a significant (p < .05) relationship with thriving at work. This operationalisation of plural leadership suggests that the more people in teams who display transformational leadership behaviours, then the more likely thriving at work will emerge within the team.

While there have been several studies that have addressed negative indicators of teachers’ work lives, including stress and burnout, relatively few have examined the “more important aspects of teachers’ successful and healthy functioning at work, such as positive affect and prosocial relationships” (Renshaw, Long & Cook 2015, p. 289). A small and growing number of researchers have begun to focus attention and energy onto issues of teacher wellbeing and these studies have developed models of occupational wellbeing (Horn et al. 2004), stress coping (Parker et al. 2012), student-teacher relationships (Spilt, Koomen & Thijs 2011) together with the development and validation of a wellbeing questionnaire for teachers (Renshaw, Long & Cook 2015). At the same time, there is an absence of empirical scholarship that examines the
antecedents, process and outcomes of teacher wellbeing (Renshaw, Long & Cook 2015) and nothing, at the time of writing, that examined these factors in relation to teacher teams and team dynamics.

These studies give some indication of the current scholarship around positive psychology in school settings. Thriving, however, is distinguished from these and other related constructs within the area of positive psychology such as resilience, flourishing, flow and self-actualisation. There is no research literature that addresses the construct of thriving at work among teachers, nor the association between this and team processes and plural leadership in teacher teams. Consequently, this work makes a unique and important contribution to several significant components relating to the “growth in a positive capacity” (Spreitzer & Porath 2013, p. 5) and development of teachers.

Researchers have stressed the need to incorporate both density and distribution measures when utilising SNA to determine plural leadership in teams (D’Innocenzo, Mathieu & Kukenberger 2016; Mehra et al. 2006; Small & Rentsch 2010). These measures, in addition to the analysis of the mutuality of leadership behaviours, together suggest that the amount, reciprocity and distribution of transformational leadership form an important contextual feature in teams that support thriving at work and the psychological growth of individual team members. This research provides an important platform for leadership and team development in schools and suggests a pathway that includes plural leadership processes, thriving at work and team effectiveness outcomes.

6.4.5 Thriving at Work and Team Outcomes

This research has viewed plural leadership relationships as team processes that support affective, cognitive and motivational emergent states along with team performance behaviours. These emergent states and behavioural outcomes are expressed in the form of team commitment, team learning behaviour and thriving. This research framework also provided an opportunity to explore the relationship between the psychological state of thriving at a team level and two dependent variables; the first examined the association between thriving and a team performance behaviour in the form of team learning behaviours and the second investigated the relationship between thriving and team commitment as an affective emergent outcome.

6.4.6 The Relationship between Thriving at Work and Team Learning Behaviour

Team learning behaviour, while fundamentally based on individual learning, is viewed as a team level property and process that includes sharing, storage and retrieval of group knowledge,
routines and behaviours (Wilson, Goodman & Cronin 2007). Team learning behaviour is seen as an essential capability of groups as it supports the groups’ collective capacity to face adaptive challenges and enhance team effectiveness.

During the last decade governments and school systems have made efforts to improve education systems to support better student performance (Beverborg et al. 2015; Park, Henking & Egley 2005; Ohlsson 2013; Silins & Mulford 2002). Consequently, teacher learning has become an important topic in educational research as teachers are expected to adapt, innovate and collaborate as professional learning communities (Meirink et al. 2010). Teams are, therefore, viewed as fundamental building blocks to address these changes and there is a greater appreciation of the need for effective team processes in which there are positive and constructive patterns of thoughts and actions (Havnes 2009; Ohlsson 2013). Scholars have responded to this raised interest by researching the dynamics of learning in teams of teachers and their findings have emphasised the need for collaboration, interdependence, dialogue and collective reflection within teams (Havnes 2009; Johnson 2003; Meirink et al. 2010; Vanblaere & Devos 2016). At the same time, researchers in the field of education have also emphasised the importance of several psychological factors such as group potency, team psychological safety, team entitativity, team cohesion, team and self-efficacy (Geijsel et al. 2009; Hedlund & Osterberg 2013; Raes et al. 2015; Vangrieken, Dochy & Raes 2016). These findings reflect research undertaken in organisational scholarship with investigations at a team level being limited to the exploration of a small number of different affective processes that include psychological safety (Brueller & Carmeli 2011; Edmonson 1999; Kostopoulos & Bozionelos 2011), group cohesion, commitment and trust (Akgun et al. 2014; Wong 2004; Sellmer-Bruhn & Gibson 2006).

While researchers are garnering a deeper understanding of the importance of team learning and the impact of different affective antecedents, educational commentators, researchers and administrators are also becoming more acutely aware of the role positive psychological states, such as wellbeing, play in developing and maintaining effective educational outcomes. Teacher wellbeing is seen as a critical factor in supporting student achievement, school effectiveness and teacher supply (McCallum et al. 2017). While there is a growing awareness of the importance of staff wellbeing in schools, research has not explored the link between this and other forms of positive organisational scholarship and teacher learning in schools. Coincidentally, outside the field of educational research, scholars have shown that thriving at work is a crucial mechanism for enabling higher levels of task performance (Porath, Spreitzer & Gibson 2007), self-development (Paterson, Luthans & Jueng 2014), greater organisational
citizenship behaviours (Porath, Spreitzer & Gibson 2007), improved employee commitment (Spreitzer & Porath 2012) and innovation and creativity (Carmeli & Spreitzer 2009). At the same time, thriving has also been linked to healthier lifestyle behaviours (Spreitzer, Cobb, & Stevens, 2007), improved well-being (Shirom et al. 2008) and reduced burnout and strain (Milosevic, Bass, & Paterson 2013; Porath et al. 2012; Spreitzer et al. 2012).

This research has added gravitas to positive organisational scholarship in education and supplements the growing body of understanding about thriving as a construct. This is evident not only in the strong relationship between plural transformational leadership and thriving, but also in the results of the hierarchical multiple regression that explored the relationship between thriving and team learning behaviour. While the control variables of team size and average time in the team did not demonstrate any statistical association with the dependent variable of team learning behaviour, the (Δ) R² of .571 and the corresponding p values (p < .001) illustrated that thriving independently explained 57% of variance in team learning behaviours. This provided substantial support for hypothesis five: team thriving is positively related to team learning behaviour.

As a psychological state, thriving is viewed as a temporary internal property, in which individuals experience both a sense of vitality and a sense of learning at work (Spreitzer et al. 2005). Thriving team members are focused on growing and developing at work and are energised so that they feel passionate and excited. Thriving may support team members contribute to team learning as they will have the energy and zest to identify and assist the team to learn together and adapt to new demands, contexts and requirements. Concurrently, through a desire to grow at work and with a need for advancement and development in their own learning, individual team members are also likely to seek out opportunities for skill and knowledge acquisition through engagement with others in the team. Thriving individuals, due to their strong energy and intrinsic motivation to learn, may be more likely to engage in supporting the groups collective capacity to learn together.

6.4.7 The Relationship between Thriving at Work and Team Commitment

Teacher commitment has been described as a crucial component of school effectiveness (Hulpia, Devos & Van Keer 2011) and therefore authors believe that it is important to identify those factors that determine and predict teacher commitment in schools (Chestnut & Burley 2015; Hulpia, Devos & Van Keer 2011). Researchers have most frequently concentrated their attention on teachers’ commitment to their school (Park, Henkin & Egley 2005) but some have also directed attention to teachers’ commitment to their profession (Chestnut & Burley 2015; Somech & Bogler 2002), to student learning (Somech & Bogler 2002) and to their teams (Park,
Henkin & Egley 2005). In many cases teacher commitment, whether focused at the organisational, professional or student level, has been positively associated with a variety of important outcomes that included student achievement, higher job and career satisfaction, feelings of self-efficacy (Kushman 1992) and organisational citizenship behaviour (Somech & Bogler 2002).

In turn, given the raised awareness of the role of teacher commitment in facilitating school effectiveness, empirical research has begun to explore those factors that affect teacher commitment in schools. Individual aspects have been limited to levels of self-efficacy, while organisational factors have included the amount of support received by staff, their levels of workplace autonomy and the opportunities they had been given to be challenged, involved in decision making and learning at work (Firestone & Pennell 1993; Hulpia & Devos 2010; Kushman 1992; Somech & Bogler 2002). Other studies have also shown that having the opportunity to contribute together as a team and develop teamwork were significant predictors of both teacher organisational commitment (Dee, Henkin & Singleton 2006; Kushman 1992) and team commitment (Park, Henkin & Egley 2005).

A small body of scholars have extended the existing research platform outlined above by exploring the relationship between positive psychological states and organisational commitment. This work, instead of examining “teacher illbeing” by measuring factors such as teacher stress and burnout, explored “indices of human thriving” (Kern et al. 2014, p. 501). Findings of research undertaken in one school in South Australia by Kern et al. (2014) highlighted that when staff members were doing well across multiple wellbeing domains, they were more satisfied with their health, life and jobs and more committed to the school. The results specifically demonstrated that wellbeing as expressed through positive engagement and relationships at work was most strongly related to the dependent variable of organisational commitment (Kern et al. 2014; McCallum et al. 2017). Conversely, an inquiry undertaken by McInerney et al. (2014), explored the relationship between teacher commitment and psychological wellbeing with results showing that both affective and normative commitment were positively associated with psychological wellbeing and thriving in the workplace.

Within the broader field of organisational scholarship, the relationship between positive psychological states and employee commitment has also been investigated in research on thriving. An enquiry undertaken by Walumbwa et al. (2018) has shown that “collective thriving at work positively relates to collective affective commitment which in turn, positively relates to overall unit performance” (Walumbwa et al. 2018, p. 257). In addition, Spreitzer and Porath
(2012) reported that companies with thriving employees performed 16% more effectively and thriving employees were 32% more committed to the organisation.

The results presented in the work undertaken by Kern et al. (2018), Walumbwa et al. (2018), McInerney et al. (2014) and Spreitzer and Porath (2012) imply that positive psychological states will have constructive and significant relationships with employee commitment. This research has reinforced that contention but has examined commitment at a team level in deference to teams being viewed as fundamental building blocks of change and school improvement (Maeroff 1993; Park, Henkin & Egley 2005; Pounder 1999). These results have supported findings in general organisational research and, more specifically, within the area of positive organisational scholarship in the field of education. This is evident in the strong statistical findings demonstrated for the hierarchical multiple regression. These results illustrated that thriving at work independently made a significant ($p < .001$) contribution and accounted for 67% of the total variance in team commitment. This provided substantial support for hypothesis six; team thriving is positively related to team commitment.

Both vitality and learning predict effect and behaviour at work and are considered simultaneously as thriving. When individuals thrive at work they feel progress and momentum through learning and have energy available to engage with others in their work (Carmeli & Spreitzer 2009). Thriving within teams allows personal relationships to flourish with a commitment to the principles and direction of the team. Both Spreitzer and Porath (2012) argue that when employees thrive, their teams and organisations also thrive. This research evidence suggests that thriving facilitates an attachment, identification and involvement within teams and thriving in teams supports team commitment as an affective emergent outcome.

6.5 Limitations

The findings in the preceding chapters have been assessed within the context of a rigorous review of several methodological and theoretical limitations. When balanced with the theoretical and empirical foundations that underpinned this research design and combined with the rigorous statistical analysis and practicalities of collecting data to be used for SNA, these limitations are not sufficiently material to impact the conclusions.

In the current study, all variables were directly obtained from the same source, with each participant completing several instruments within the questionnaire at the same time. Repeated self-reports have the potential to introduce common method bias. This bias may be applicable in hypotheses five and six where the relationships between thriving at work and two dependent variables team learning behaviour and team commitment were explored. While
patterns of plural transformational leadership were obtained by making use of peer ratings and calculated by using a social network approach, the other constructs were achieved by aggregating individual responses to a team level.

To address any concerns regarding common method bias, a Harman’s single factor test (Podsakoff et al. 2003) using an un-rotated exploratory factor analysis in conjunction with principal axis factoring was used. The loading for the first principal component registered a value of 0.42. When using Harman’s factor test there were no specific guidelines on how much variance the first factor should extract (Podsakoff et al. 2003), but a “customary heuristic is to set the threshold to .50” (Eichhorn 2014, p. 4) with values above 50% suggesting the common method bias may be present. While this cut-off was not exceeded in this research, it is “impossible to eliminate all forms of common method biases in a particular study” (Podsakoff et al. 2003, p. 899), and therefore reasonable to assume that the relationships illustrated in this research are affected by some bias on some level. However, this does not mean that this influence is “necessarily and routinely upwardly biased” (Conway & Lance 2010, p. 325).

Various authors have promoted a diversity of “procedural remedies” to address issues associated with common method variance (Podsakoff et al. 2003; Podsakoff, MacKenzie & Podsakoff 2012; Williams & McGonagle 2016). Authors such as Conway and Lance (2010), Doty and Glick (1998) and Podsakoff et al. (2003) emphasise the importance of controlling common method bias through the design of study procedures. A number of those requirements have been met in this research; these included maintaining respondent anonymity, the improvement of scale items and the counterbalancing of question order. In addition, well-validated measures were used in the main study and these measures had a history in the academic literature of acceptable reliability. Moreover, the construct validity of all measures, as expressed in both the CFA and PCA provided support concerning the discriminate validity of those measures.

Other “procedural remedies” suggested by Podsakoff et al. (2003), Podsakoff, MacKenzie and Podsakoff (2012) and Williams and McGonagle (2016) included ensuring methodological separation of measures by collecting data from multiple sources and at different times. The first remedy assumes that “other-reports”, or other methods of collecting the data are superior to self-reported information (Conway & Lance 2010). It is argued here that individual team members are best placed to self-report thriving, learning and commitment because they provide the most accurate and direct assessment of their attitudes, behaviours and cognitions. In addition, participants are best situated to evaluate the influence behaviours of other team members on them. Alternatively, obtaining measures from different sources outside the team was considered impractical and less accurate. At the same time, consideration was given to
collecting data from the same respondents in a second timeframe. Creating temporal separation by establishing a delay between initial and secondary measures was deemed unrealistic and to do so would have resulted in a further increase in the high attrition rate of team level data.

In conclusion, careful consideration of common method variance was undertaken in the pre-planning and facilitation of this research. Various processes were adopted to provide “remedies” for the impact of common method variance, and these have, to some degree, been effective with a Harman’s one-factor score of .42. However, it is reasonable to assume that the relationships illustrated in this research are affected by some degree of bias but not necessarily in an upward trajectory (Conway & Lance 2010). Post-hoc statistical techniques were not adopted in this analysis as they have received criticism (Podsakoff et al. 2003) and are not considered the “magic bullet” for issues arising from common method bias. Instead they are “incomplete and inconsistent” (Teheesen & Ramayah 2017) and “all have significant drawbacks, and some have shown poor empirical results” (Conway & Lance 2010, p. 325).

Caution should also be directed toward inferring causality between the variables outlined in this research. This issue is specific to the use of hierarchical multiple regression as a statistical technique. While some authors suggest that hierarchical multiple regression can be used in a causal analysis, others such as Petrocelli (2003) and Pearl (2011) caution against “causal priority” and recommend that “causal and statistical information are two different species that do not and should not be mixed” (Pearl 2011, p. 426). This research used hierarchical multiple regression for predictive modelling with the measure of $R^2$ and $(\Delta) R^2$ being critical statistical calculations. Therefore, results do not lend themselves to supporting causal relationships between variables. In addition, the design of this research does not rule out the possibility that the path of association or prediction is the reverse of that hypothesised.

The third limitation evolved with the research design and the use of social network analysis within teams. A disadvantage of social network analysis is that it requires round-robin ratings, and this means that participation for team members can be time consuming. It is possible that some team members found this process too protracted as they needed to rate each other on a variety of different transformational leadership behaviours. This can lead to loss and attrition of data in groups where few team members participate. The result was that the original dataset of 113 teams was reduced to 76 teams.

At the same time a preliminary test for data aggregation, the assessment of interrater agreement, indicated that there were seven teams that did not meet the cut off criteria. These
were found for the task interdependence measure developed by Pearce and Gregersen (1991). The potential solution supported by LeBreton and Senter (2008) was to develop two sets of aggregate analysis, one excluding the seven teams. This solution was not adopted, as the total team number of 76 teams did not afford the latitude to remove seven teams and to do so would have failed to meet Tabachnick and Fidell’s (2007) requirements for sample size for testing the multiple $R$ value for statistical significance. In order to maintain reliable regression models that met the requirements stipulated by several “rules of thumb” (Halinski & Feldt 1970; Miller & Kunce 1973) and as determined by power analysis (Field 2013; Miles & Shevlin 2006), each investigation was limited to testing three independent variables. These included two controls and one social network measure. The sample size restricted the possibility of measuring all three social network measures together as multiple independent variables into the same regression equation. At the same time, the sample size did not permit the examination of more complex relationships that unified numerous linear models, such as structural equation modelling.

Another potential limitation appears from different nuances inherent in the use of density and decentralisation measures. While social network approaches are well-suited for investigating plural leadership as a relational phenomenon (D’Innocenzo, Mathieu & Kukenberger 2016; Nicolaides et al. 2014; Wang, Waldman & Zhang 2014; Zhu et al. 2018), there are also some pitfalls in utilising density and decentralisation measures to examine the binary leadership relationships in teams. Density measures begin to embrace the complexity of plural leadership in teams, but they are essentially a form of aggregation and do little to explain the distribution of leadership or its patterns of plurality (Engel & Small 2010; Gockel & Werth 2010; Park & Kwon 2013; Zhu et al. 2018). In other words, teams with the same level of leadership density may differ in the extent to which leadership influence is disbursed within the team (Zhu et al. 2018). Alternatively, decentralisation is a group-level index that represents how dyadic relationship ties are distributed throughout the team. Networks with high levels of decentralisation are equated as those in which team members have similar levels of influence on their peers and where leadership is well distributed. However, high levels of decentralisation are not only found in instances where team members have similar levels of influence on their peers. High decentralisation can also reflect “leaderless groups” in which there is an absence of leadership (D’Innocenzo, Mathieu & Kukenberger 2016; Mehra et al. 2006). The use of three SNA indices has assisted in providing some inoculation to these pitfalls which are inherent within this type of SNA approach.
This study focuses on the adoption and use of transformational leadership measures to evaluate what exactly was being shared, distributed and reciprocated between team members. Critics may emphasise that the fundamental tenant of transformational leadership theory is grounded in a hierarchical system of leadership, with De Rue (2011) describing the hierarchical assumption as “ubiquitous”. Some scholars have emphasised that “when considering leadership across hierarchical sites researchers assume that transformational leadership originates from people who are hierarchically superior” (De Rue 2011, p. 127). Therefore, transformational leadership theory might not be enough to explain the nature of plural leadership behaviours which may differ from those of traditional vertical leadership models. While acknowledging the weaknesses of using a leadership theory grounded in a hierarchical construct, there are several important rationales underlying the use of Rafferty and Griffin’s transformational leadership instrument. The first is that both within the area of general organisational scholarship and particularly within educational research there is a growing understanding of the importance of transformational leadership practices. Furthermore, there is also a developing body of literature that has operationalised shared leadership in teams by utilising transformational leadership practices (Avolio et al. 1996; Balthazard et al. 2004; Boies, Lvina & Martens 2010; Ensley, Fasuring et al. 2015; Ensley, Hmielecki & Pearce 2006; Gupta, Rui & Yayla 2011; Hoch, Pearce & Welzel 2010; Ishikawa 2012; Martin et al. 2013; Nielsen & Daniels 2012; Pearce & Sims 2002; Pearce, Yoo & Alavi 2004; Sivasubramaniam et al. 2002; Small & Rentsch 2010; Sun, Xu & Shang 2014; Wood 2005). In addition, it was important in this research to specifically measure what behaviours were being shared, distributed and reciprocated within teams. This level of specificity contrasted with other work that had adopted a more generic view of plural leadership in teams by asking team members to rate the extent to which the team relied on a respective teammate for leadership (Carson, Tesluk & Marrone 2007). Finally, the combination of both SNA techniques and transformational leadership measures has successfully captured the relational dynamics that underlie plural influence in teams.

6.6 Implications and future research
This study adds to a small but growing body of empirical research on different forms of plural leadership in teams. This has been achieved by conceptualising plural leadership as a relational phenomenon expressed through shared, distributed and reciprocal transformational influence relationships at the team level. Different patterns of network ties have provided an operationalisation of plural transformational leadership with several demonstrating significant positive predictions of specific emergent states and behavioural outcomes. At the same time several areas for future research are highlighted by these findings with possibilities to extend the existing research and these opportunities are outlined below.
Teams are central to this research. Teams in general, and particularly those in schools, are required to perform in complex, diverse and dynamic environments (Barnett & McCormick 2016; Bouwmans et al. 2017; Zaccaro & Klimoski 2002). At the same time, while education systems and schools pursue new reforms to promote school effectiveness, work in schools has become increasingly organised around teams (Barnett & McCormick 2016; Bouwmans et al. 2017; Somec & Bogler 2002). This study contributes to the understanding of leadership within school teams and it holds some important implications for formal school leaders, managers and team members.

Firstly, social network analysis provides an analytical perspective that can help teams and team leaders conceptualise and measure patterns, the dynamics of relationships and influence in teams. Secondly, there is empirical evidence that transformational leadership behaviour can be learned (Bono & Judge 2004; Warrick 2011). Therefore, school leaders can coach and train staff to develop strong internal transformational leadership patterns within teams to facilitate teamwork and team commitment as well as support team learning behaviour and thriving. At the same time team leaders can also promote internal transformational leadership practice by encouraging staff to view themselves and other team members as leaders in the team and actively engage them in reciprocal leadership practices. Schools can also provide training and coaching that fosters a collective understanding of transformational leadership perspectives.

Secondly, with a growing awareness of the need for positive organisational behaviours in workplaces (Yousseff & Luthans 2007), it is important for schools to develop strategies and holistic approaches to supporting staff (McCallum et al. 2017). Research has demonstrated that positive leadership relationships, plural leadership and transformational practices can have an affirmative influence on teachers’ wellbeing and positive organisational behaviours (Beverborg et al. 2015; Hoch & Dulebohn 2013; Hulpia & Devos 2010; Leithwood, Harris & Hopkins 2008; Louis et al. 2010; Ross & Gray 2006; Mulford 2011; McCallum et al. 2017; York-Barr & Duke 2004). Together, the strong associations found in this research between different patterns of plural transformational leadership and thriving, lend support to the possibility that by developing transformational leadership ties in teams, school and team leaders may also be facilitating the improvement of teachers’ positive psychological states.

In addition, other researchers have illustrated the importance of transformational, shared and school leadership in enabling and supporting team learning behaviours (Beverborg et al. 2015; Bouwmans et al. 2017; Chiu, Lin & Chien 2009; Geijsel et al. 2009; Huang 2013; Kim 2017; Leithwood, Steinbach & Ryan 1997; Liu et al. 2014; Loon & Lim 2012; Peltokorpi & Hasu 2015; Raes et al. 2013; Wang et al. 2017). Team learning in schools is considered an important
foundation for educational change and improvement of student outcomes (Beverborg et al. 2015; Bowen et al. 2007; Gregory 2010; Havnes 2009; Lomos, Hofman & Bosker 2011; Moolenaar, Sleegers & Daly 2012; Vangrieken et al. 2015; Wijnia et al. 2016). The associations between plural leadership practice and team learning behaviour reported in this research lends support to the contention that the development of transformational leadership practice within teams has the capacity to enable team learning, thereby supporting school initiatives for change.

Previous research has emphasised the importance of formal or vertical “external” leaders in supporting and enabling shared leadership (Carson, Tesluk & Marrone 2007; Chiu, Owens & Tesluk 2016; Choi, Kim & Kang 2017; Conger & Pearce 2003; Fausing et al. 2013; Zhu et al. 2018). Moreover, team leadership styles, such as transformational influence behaviours, may play an important role in enhancing plural leadership within teams (Choi, Kim & Kang 2017; Ishikawa 2012; Zhu et al. 2018). Several authors have queried whether vertical and plural leadership are dependent on each other and to what extent the actions of a formal team leader act as a catalyst in the promotion and emergence of plural leadership in teams (Houghton, Neck & Manz 2003). Therefore, an opportunity arises to extend this research by investigating the relationships that might exist between the leadership behaviours of team leaders and the density, decentralisation and reciprocity of plural leadership activity in teams. In addition, researchers in the field of education have recognised that transformational leadership provides the conditions that support school improvement. Consequently, it is important to analyse in what ways transformational team leader behaviours and plural forms of transformational leadership can complement each other to enhance the effectiveness of school teams and school organisations.

This research has taken a relational rather than functional view of leadership in teams. Social capital and the relationship between actors are considered at the heart of social network analysis (Balkundi & Kilduff 2005) which suggests that it is well-suited to be used to operationalise plural leadership in teams. Researchers have begun to explore the utility of SNA techniques when analysing plural leadership practice (Gockel & Werth 2010; Small & Rentsch 2010). The findings of this research support the earlier utilisation of both density and decentralisation measures. They also display the same profile with density measures illustrating more consistent association with the emergent and behavioural dependent variables (D’Innocenzo, Mathieu & Kukenberger 2016). This study is one of the few to follow earlier recommendations and operationalise plural leadership through the utilisation of both density and decentralisation techniques (D’Innocenzo, Mathieu & Kukenberger 2016; Engel & Rentsch
Furthermore, at the time of writing, this research is perhaps the first to establish reciprocity as a measure of plural leadership activity in teams. Reciprocity illustrates the quality, stability, cohesiveness and balance of leadership ties in teams. The further exploration of the patterns and associations created by reciprocal leadership ties is potentially another area of interest for future research, including for example exploring the relationship between group outcomes and patterns of asymmetric (non-reciprocated) and symmetric (reciprocated) leadership ties in teams.

Another potentially interesting area for future research concerns Rafferty and Griffin’s (2004) subdimensions of transformational leadership. Findings of the principal components analysis (PCA) undertaken in the initial pilot study illustrated that the 12 subdimensions used in this research loaded on three rather than four components. These three components were labelled intellectual stimulation, empowering leadership and personal recognition (Table 5.4). An additional PCA was conducted using the main body of data and this showed that items clustered around two components (Appendix M). These were labelled as transformational empowerment and intellectual stimulation. The original study conducted by Rafferty and Griffin (2004) affirmed that their transformational leadership model distinguished between inspirational communication, intellectual stimulation, supportive leadership and personal recognition but they also noted that these constructs were correlated with each other. Therefore, it is important that future research continues to explore these subdimensions and affirm the structure and discriminant validity of this model. Another important aim of further research will be to determine whether the subdimensions of transformational leadership demonstrate significant, unique relationships and whether some have stronger associations within plural leadership settings for both team processes and outcomes.

Empowering leadership is defined as a “leader’s encouragement of employees to initiate tasks, set goals, learn new things, assume responsibilities and coordinate and collaborate with each other” (Fausing et al. 2013 p. 274). The concept of empowerment is fundamental to several subdimensions within Rafferty and Griffin’s (2004) transformational leadership model. For example, the subdimension inspirational communication focuses attention on leadership relationships that arouse emotions, confidence and motivation through the expression of positive and encouraging messages to the team. At the same time, however, empowering leadership is considered as sufficiently distinct from transformational leadership dimensions that it warrants being established as a “unique line of scholarly inquiry” (Sharman & Kirkman, 2005 p. 197). Empowering leadership has been recognised as an important leadership behaviour undertaken by formal or vertical leaders with a recent meta-analysis confirming
positive links with employee motivation, attitudes and performance (Kim, Beehr & Prewett 2018). In addition, empowering team leader behaviours have been shown to act as important antecedents to shared leadership in teams (Fausing et al. 2013). But there are few empirical studies that have explored the expression of plural empowering leadership in teams. The one exception, presented by Pearce and Sims (2002), reported that shared empowering leadership was positively related to team self-ratings of team effectiveness. Plural expressions of empowering leadership in teams that are operationalised through SNA provide opportunities to explore and extend this work by examining a contemporary leadership construct that is attracting much empirical attention (Kim, Beehr & Prewett 2018).

6.7 Conclusion
This study adds to a small, but growing, body of empirical work on plural leadership in teams. It contributes to a call for further research to conceptualise leadership as a team level relational phenomenon. This research presents a series of hypothesised models that independently test the association of plural transformational leadership with task interdependence, team commitment, team learning behaviour and thriving at work.

Social Network Analysis (SNA) was used as a method for measuring and understanding the dynamics of these leadership interactions and relationships. Results indicate that SNA is well suited to the investigation of leadership as a relational phenomenon.

Leadership density, decentralisation and reciprocity were assessed to capture the essence of plural transformational leadership within teams. These indices revealed varying insights, about the structure and functioning of plural leadership arrangements. This study was unique in that it endorses the use of reciprocity as a measure of the mutuality of leadership behaviours in teams. Reciprocity illustrates balanced leadership ties where there is a simultaneous exchange of equivalent behaviours over time. Team networks that display more reciprocated leadership ties over asymmetrical relationships were described as more equal, stable and cohesive.

The various measures of leadership relationship networks were found to be positively and significantly related to the dependent variables that expressed team processes and emergent states. Consequently, this study not only contributes to the growing awareness and understanding of leadership plurality in teams, it also emphasises the importance of “leaderful” (Raelin 2003) practice in which members consistently display transformational leadership behaviours with one another.
Although scholars have highlighted the importance of thriving in teams and organisations, research in this area remains sparse. The current understandings of thriving in teams are limited and this study provides an opportunity to extend that knowledge. The positive psychological state of thriving at work was found to be both positively and significantly associated with team learning behaviour as well as team commitment. At the same time, plural transformational leadership in teams was established as an important contextual factor that facilitated the emergence of thriving at work. Crucially, these results suggest that organisations, particularly schools, should focus attention on developing selection and training programs that support managers and team members to learn and demonstrate the key characteristics of transformational leadership. It is these key characteristics that may be instrumental in enabling the development and enhancement of employees thriving at work.

This study also supports the work of scholars in educational research by reaffirming the importance of teams, transformational leadership and plural forms of leadership practice in schools. “Leaderful” practice in teams, in which there is a network of shared, reciprocated and distributed transformational relationships, has the potential to provide a framework to enable learning, thriving and commitment. In doing so, it may also support processes of professional growth in which teachers learn together as a team, collaboratively sharing knowledge and expertise.

In sum, the results of each of these hypothesised models provide a platform to recommend several organisational and managerial initiatives. Together these results establish impetus for future research and support a growing understanding of the importance of leadership within teams. Plural leadership is a significant and beneficial, albeit multifaceted and sophisticated, construct that can enhance the realisation of myriad valuable team outcomes.
References


Bettenhausen, K.L. 1991, “Five years of groups research: what we have learned and what needs to be addressed”, *Journal of Management*, vol. 17, no. 2, pp. 345-381.


Boyd, N.M. 2015, “Introducing Thriving at Work to the Field of Community Psychology”, *Journal of Community Psychology*, vol. 43, no. 6, pp. 794-809.


EDVANTA 2005 Shared leadership and Student Achievement Research Brief; Appalachia Educational Laboratory (AEL), Nashville.


Harris, A. 2008, “Distributed leadership: according to the evidence”, *Journal of Educational Administration*, vol. 46, no. 2, pp. 172-188.

Harris, A., & Spillane, J. 2008, “Distributed leadership through the looking glass”, *Management in Education*, vol. 22, no. 1, pp. 31-34.


McCauley, C. 2013, *Direction, Alignment and Commitment Survey*, Centre for Creative Leadership, Greensboro, NC.


Mendez, M.J., & Busenbark, J.R., 2015, “Shared leadership and gender: all members are equal ... but some more than others”, *Leadership & Organization Development Journal*, vol. 36, no. 1, pp. 17-34.


Robertson, B.J. 2015, “Holacracy; The new management system for a rapidly changing world” Penguin Random House, UK


Scott, J. 2017, Social Network Analysis, Sage Publications, Los Angeles


Uhl-Bien, M., Marion, R., & McKelvey, B. 2007, “Complexity Leadership Theory: Shifting leadership from the industrial age to the knowledge era”, *The Leadership Quarterly*, vol. 18, no. 4, pp. 298-318.


Welch, M., Brownell, K., & Sheridan, S.M. 1999, “What’s the Score and Game Plan on Teaming in Schools?: A Review of the Literature on Team Teaching and School-Based Problem-Solving Teams”, Remedial and Special Education, vol. 20, no. 1, pp. 36-49.


Wilhelm, T. 2010, "Fostering shared leadership: when teachers begin taking ownership--alongside administrators--for poor student achievement, they will gain ownership of solutions that are developed as a team", Leadership, vol. 40, no. 2, p. 22-38.


## APPENDICES

### Appendix A: Summary of Team Leadership Research

<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| **Authors:** Ahearne, Mathieu & Rapp (2005): **Definition or Description** - Team Leadership Empowerment | Survey sample included 231 sales people in the Pharmaceutical field along with external ratings of satisfaction from 864 customers. | Leadership Empowering Behaviours (LEB): Assessed using a survey that contained 4 multi-item subscales that focused on enhancing the meaningfulness of work, fostering participation in decision making, expressing confidence in high performance and providing autonomy. | Leadership Empowering Behaviours (LEB) | Sale Satisfaction | • LEB exercises a greater effect on employees with lower knowledge and experience.  
• LEB enhances self-efficacy and adaptability in salespeople with low empowerment readiness. |
| **Authors:** Bai, Lin & Li (2016): **Definition or Description** - Transformational Team Leadership | 196 part-time MBA students enrolled in a Business School in China. | Transformational Leadership: Survey, 23 items, using Podsakoff et al. (1990) instrument. | Transformational Team Leadership | Employee Creativity | • Transformational leadership was negatively related to both task and relationship conflict.  
• Transformational leadership was significantly related to employee creativity when not controlling for team conflict and knowledge sharing. |
| **Authors:** Bass et al. (2003): **Definition or Description** - Transformational, Transactional and Passive Team Leadership | 72 Light Infantry Rifle Platoon Leaders. | Transformational, Transactional and Passive Leadership styles were measured using the MLQ-5X (Bass & Avolio, 2000). | Transformational, Transactional and Passive Leadership styles | Potency | Platoon Performance | • Both transformational and transactional contingent reward leadership were positively correlated with ratings of platoon potency and cohesion.  
• Ratings of Passive–Avoidant leadership for both platoon leaders and sergeants were negatively related to evaluations of Unit potency and cohesion. |
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
|               | 15 items from the German Version of the Multifactor Leadership Questionnaire form 5x-Short (Bass & Avolio, 2000). | • Transformational Leadership (Team Level)  
• Transformational Leadership (Individual Level) | • Trust in the team  
• Trust in the supervisor | • Team Performance  
• Job Satisfaction | • Results show that the platoon leaders’ transformational and transactional leadership each had positive and direct relationships with platoon performance.  
• The platoon leaders’ transformational leadership positively related to both potency and cohesion, which was also positively related to performance, |
|               | 3 items from a scale developed by Arnold, Arad, Rhoades & Drasgow (2000) were used to    | • CEO Empowering Leadership  
• TMT Behaviour Integration  
• Firm Performance  
• TMT Potency | • CEO empowering leadership positively influences behavioural integration, and team potency, which in turn influence firm performance. |                                            |                                                                                                                                          |

Authors: Braun et al. (2013): **Definition or Description** - Transformational Team Leadership

Authors: Butler, Cantrell & Flick (1999): **Definition or Description** - Transformational Team Leadership

Authors: Carmeli, Schaubroeck & Tishler (2011): **Definition or Description** - Empowering Team Leadership
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Empowering Leadership</td>
<td>Psychological Empowerment</td>
<td>Turnover Intentions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Empowering Leadership</td>
<td>Affective Commitment</td>
<td>Teamwork Behaviour</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Empowering Leadership</td>
<td>Positive Group Affective Tone</td>
<td>Team Goal Commitment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors:</td>
<td>Chen, et al. (2011): Definition or Description - Empowering Team Leadership</td>
<td>57 Undergraduate University students in one US University and 79 from a University in the Peoples Republic of China.</td>
<td>Psychological Empowerment was measured using a 12-item questionnaire from Spreitzer (1995) and Affective Commitment was assessed by using 8 modified items from Allen and Meyers (1990) instrument.</td>
<td>Empowering Leadership</td>
<td>Turnover Intentions</td>
</tr>
<tr>
<td>Authors:</td>
<td>Chi, Chung &amp; Tsai (2011): Positive Moods of the Team Leader - Definition or Description - Transformational Team Leadership</td>
<td>85 sales teams from five Insurance firms in Taiwan</td>
<td>The authors used 10 positive mood descriptors from the Positive and Negative Affect Schedule (Walton et al. 1988) and the Multifactor Leadership Questionnaire (MLQ 5X; Bass &amp; Avolio, 1995).</td>
<td>Leader Positive Moods</td>
<td>Team Helping Behaviours</td>
</tr>
<tr>
<td>Authors:</td>
<td>Chi &amp; Huang (2014): Definition or Description - Transformational Team Leadership</td>
<td>61 R&amp;D teams (team leader’s n = 61; member’s n = 263) from 32 Taiwanese high-technology firm</td>
<td>Bass and Avolio’s (2000) 20-item Multifactor Leadership Questionnaire (MLQ 5X) was used to measure Team Leaders’ Behaviours TFL.</td>
<td>Transformational Leadership</td>
<td>Team learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership</td>
<td>Team learning</td>
<td>Team Performance</td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| Authors: Chou et al. (2013): **Definition or Description** - Transformational Team Leadership  | Twenty-four survey items adapted from Cheung, Ng, Lam, and Yue (2001) were used to measure four aspects of Transformational Leadership. | ● Transformational Leadership Style  
● Trust in the Leader  
● Trust among Team Members  
● Collective Efficacy | Team Performance | • Transformational leadership style affected collective efficacy by way of cognitive trust in the team leader and cognitive trust among team members.  
• Therefore, transformational leadership will help foster a team's collective efficacy and leads to the distal outcome: team performance. |
| Authors: Chun, Cho & Sosik (2016): **Definition or Description** - Individual Transformational Team Leadership: Group-focused Transformational Leadership | The authors used 12 items from the idealised influence and inspirational motivation subscales of the Multifactor Leadership Questionnaire (MLQ-SX; Bass & Avolio, 1997). | ● Individual Transformational Leadership  
● Group-Focused Transformational Leadership  
● Leader Member Exchange (LMX)  
● Team Member Exchange (TMX) | Team Performance  
In-role and extra-role performance | • Results indicated that the team leader can enhance team performance and members' in-role and extra-role performance by displaying both group- and individual-focused transformational leadership in parallel.  
• But the effectiveness of a transformational team leader was mediated by the quality of social exchanges in member–member (i.e., TMX) and leader–member (i.e., LMX) relationships. |
| Authors: DeChurch et al. (2011): **Definition or Description** - Multiteam Systems (MTS) Functional Leadership | Functional Leadership response at a Multi-team-systems level (MTS) to 110 critical incidents | ● MTS Functional Leadership  
● Inter/Intra Team Coordination | Team Performance | • Functional leader behaviours were found to have several different points of impact that included within team, between teams and across systems.  
• Functional leadership behaviour also had an impact on emergent properties manifest at each level. |
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Edmondson (1999): Definition or Description - Team Leader Coaching | 53 teams in manufacturing companies | • Phase 1: Qualitative Interviews and Observations  
• Phase 2: Survey of Team members- a five-section survey developed for this study  
• Phase 3: Follow up Qualitative Observations of highest lowest average Team Learning Behaviours | • Team Leader Coaching  
• Team Membership  
• Context Support  
• Team Efficacy | Team Psychological Safety  
Team Learning Behaviours | • Team leader coaching is associated with team psychological safety and team learning behaviour. |
| Authors: Edmondson (2003): Definition or Description - Team leaders were described as those who could help coordinate action when members otherwise might not know what to do | The author analysed data from a study of 16 cardiac surgery teams | This paper emphasized interpersonal and affective dimensions of team leadership to suggest that attention to social and emotional factors, especially related to interpersonal risk, may help explain variance in team outcomes. | • Organisational Context;  
• Resources  
• Information  
• Management support  
• Innovation history  
• Team leadership  
• Motivate input  
• Minimizing power differences | Team learning processes  
• Ease of speaking up  
• Boundary spanning  
• Practice/reflection | Implementation success | The study shed light on how team leaders facilitated learning. The author discovered two leadership strategies:  
• motivating effort through a compelling rationale  
• and second creating psychological safety by reducing power-based barriers to speaking up |
| Authors: Eisenbeiss, Knippenberg & Boerner (2008): Definition or Description: - Transformational Team Leadership | 33 R&D teams from one research institute and four international R&D companies. | The authors measured Transformational Leadership using a 20-item scale from the Multifactor Leadership Questionnaire (MLQ) developed by Bass and Avolio (1995). | Transformational Leadership | Support for Innovation  
Climate for Excellence | Team Innovation | Transformational leadership was positively related to support for innovation. |
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authors:</strong> Gupta, Huang &amp; Niranjan (2010): <strong>Definition or Description</strong> - Team Leadership: Idealise Influence, Inspirational Motivation and Teamwork Encouragement</td>
<td></td>
<td></td>
<td>Team Leadership</td>
<td>Performance: financial performance as measured by sales growth of the firm in the business simulation game.</td>
<td>• Authors found that team leadership was strongly negatively related to conflict but not to cohesion. • Results indicated that conflict mediated the relationship between team leadership and performance. • The authors also found that performance significantly influenced subsequent team leadership.</td>
</tr>
<tr>
<td>The authors collected data from 117 business students (divided into 28 teams) taking an undergraduate Capstone course in Strategic Management at a large metropolitan university in the Midwestern United States. Each team undertook a business computer simulated strategy game.</td>
<td>• Data was collected from individual participants through questionnaires distributed in class • Team Leadership was measured at two points in time, using an eight-item Leadership Scale comprising three interrelated Leadership Behaviours (Jung &amp; Sosik, 2002)</td>
<td></td>
<td>Team conflict • Team Cohesion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Hu &amp; Liden (2011): <strong>Definition or Description</strong> - Servant Team Leadership</td>
<td></td>
<td></td>
<td>Team Potency</td>
<td>Team Performance</td>
<td></td>
</tr>
<tr>
<td>The study was conducted in five banks in China with a sample of 304 employees represented 71 teams.</td>
<td>Team members assessed their leaders with Liden et al.’s (2008) 28-item Servant Leadership Scale.</td>
<td>• Goal Clarity • Process Clarity • Servant Leadership</td>
<td>Team Potency</td>
<td>Team Performance</td>
<td>• Team servant leadership was significantly and positively related to both team performance and team potency • Team servant leadership was found to enhance team effectiveness by elevating team potency.</td>
</tr>
<tr>
<td><strong>Authors:</strong> Jiang &amp; Chen (2016): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Study 1: 44 project groups from a Chinese Biopharmaceutical firm • Study 2: 72 teams from companies in a variety of industries, including chemical products, electronic and electrical equipment and components, medical and optical devices, banking, and information technology, in China.</td>
<td>Transformational Leadership was measured by using Bass and Avolio’s (1995) Multifactor Leadership Questionnaire Form 5X-Short (MLQ).</td>
<td></td>
<td>Team Cooperative Norms • Team Autonomy • Within team Knowledge Sharing • Team Knowledge Acquisition</td>
<td>Team Innovative Performance</td>
<td>• Study 1: Transformational leadership was found to be positively related to knowledge sharing. • Study 2: Researchers found that transformational leadership was positively related to team cooperative norms and knowledge sharing. • Overall, results did not provide consistent support for a direct relationship between transformational leadership and team innovation.</td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Authors:</strong> Jung &amp; Sosik (2002): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td>The study focused on 217 employees from 47 teams in four large Korean firms located in Seoul.</td>
<td>Transformational Leadership</td>
<td>Transformational Leadership</td>
<td>Perceived Group Effectiveness</td>
<td>Transformational leadership was positively related to empowerment, group cohesiveness and perceived group effectiveness.</td>
</tr>
<tr>
<td></td>
<td>Transformational Leadership was measured using a 28-item scale from the Multifactor Leadership Questionnaire (MLQ) developed by Bass and Avolio (1990).</td>
<td></td>
<td>Group Cohesion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Empowerment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collective Efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Kearney (2008): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td>A field study of 49 R&amp;D teams in the Pharmaceutical industry in Germany.</td>
<td>Transformational Leadership was measured with the 20 Transformational Leadership items of the MLQ-5X Short (Avolio &amp; Bass, 2004).</td>
<td>Transformational Leadership</td>
<td>Team Performance</td>
<td>Results indicate that it makes a difference whether transformational leadership is provided by a leader who is older than or about the same age as the followers. If the leader is older then there is a positive relationship between transformational leadership and team performance. Findings also suggest that leaders of a similar age as the followers are less likely to positively affect team performance through transformational behaviours.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Age differences between leader and team members</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Kearney &amp; Gebert (2009): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td>This study used 62 research and development (R&amp;D) teams in Germany</td>
<td>Transformational leadership was measured with the 20 items of the Multifactor Leadership Questionnaire (MLQ-5X Short; Avolio &amp; Bass, 2004)</td>
<td>Age</td>
<td>Team Performance</td>
<td>When transformational leadership was high, team performance was significantly positively related to diversity regarding nationality and educational background. Therefore, results confirm that transformational leadership moderates the relationship of age, nationality, and educational diversity with team performance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nationality</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Educational Diversity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collective team Identification</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Elaboration of Task-Relevant Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership</td>
<td></td>
<td>Speed to Market</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership (Intellectual Stimulation and Charismatic Leadership)</td>
<td></td>
<td>Project Team Performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Substitutes for Leadership</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Initiating Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intrinsic Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Keller (2006): Definition or Description - Transformational Team Leadership</td>
<td>Ten items from the Charismatic Leadership Scale from Bass’s (1985) Multifactor Leadership Questionnaire (MLQ) were used for this research.</td>
<td>Type of R&amp;D work</td>
<td></td>
<td>Charismatic Leadership items and Intellectual Stimulation items were combined into a Transformational Leadership variable.</td>
<td></td>
</tr>
<tr>
<td>Authors: Kirkman &amp; Rosen (1999): Definition or Description - Empowerment from External Team Leader</td>
<td>Authors conducted the study in four organisations that had formally implemented work teams. The companies, all of which were in the South Eastern and South Western United States, included two textile manufacturers, a high-technology manufacturer, and an Insurance company.</td>
<td>Team Leader Empowerment</td>
<td>Team Level Productivity</td>
<td>The results showed that team empowerment was significantly related to external team leader behaviours.</td>
<td></td>
</tr>
<tr>
<td>Authors: Kumpfer et al. (1993): Definition or Description - Empowering Team Leadership</td>
<td>The Authors developed a Leader Support Style instrument that examined egalitarian and empowering styles of leadership.</td>
<td>Empowering Team Leadership</td>
<td>Team Level Customer Service</td>
<td>The major finding was that highly empowered teams are more effective than less empowered teams.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gender</td>
<td>Team Level Job Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Education</td>
<td>Team Level Organisational Commitment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Satisfaction</td>
<td>Team Level Team Commitment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Team Efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ratings of Team Plans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Team Member Outcomes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Member’s gender and education measures were significantly related to perceived leader empowerment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>An important finding from this study was that the style of leadership provided by the coalition leaders was found to be very critical to the effectiveness of the teams and was</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Authors: Keller (2006): Definition or Description - Transformational Team Leadership
This study examined 118 Research and Development (R&D) Project Teams from 5 firms.

Ten items from the Charismatic Leadership Scale from Bass’s (1985) Multifactor Leadership Questionnaire (MLQ) were used for this research.

- Transformational Leadership
- Intellectual Stimulation
- Charismatic Leadership
- Substitutes for Leadership
- Initiating Structure
- Intrinsic Satisfaction
- Type of R&D work
- Speed to Market
- Project Team Performance
- Charismatic Leadership items and Intellectual Stimulation items were combined into a Transformational Leadership variable.
- Transformational Leadership strongly predicted technical quality, and it also predicted schedule and cost performance.
- Transformational Leadership also was a strong predictor of profitability and speed to market.

Authors: Kirkman & Rosen (1999): Definition or Description - Empowerment from External Team Leader
Authors conducted the study in four organisations that had formally implemented work teams. The companies, all of which were in the South Eastern and South Western United States, included two textile manufacturers, a high-technology manufacturer, and an Insurance company.

The authors used an “external leader behaviour” group construct which they measured with a 14-item scale.

- Team Leader Empowerment
- Production Services Responsibilities
- Team Based Human Resources Policies
- Group Social Structure
- Team Empowerment
- Team Meaningfulness
- Team Autonomy
- Team Impact
- Team Level Productivity
- Team Level Customer Service
- Team Level Job Satisfaction
- Team Level Organisational Commitment
- Team Level Team Commitment
- The results showed that team empowerment was significantly related to external team leader behaviours.
- The major finding was that highly empowered teams are more effective than less empowered teams.

Authors: Kumpfer et al. (1993): Definition or Description - Empowering Team Leadership
A total of 65 team members from ten teams were included in this analysis. These respondents were actively involved in establishing abuse prevention programs.

The Authors developed a Leader Support Style instrument that examined egalitarian and empowering styles of leadership.

- Empowering Team Leadership
- Gender
- Education
- Satisfaction
- Team Efficacy
- Ratings of Team Plans
- Team Member Outcomes
- Member’s gender and education measures were significantly related to perceived leader empowerment.
- An important finding from this study was that the style of leadership provided by the coalition leaders was found to be very critical to the effectiveness of the teams and was
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership Style</td>
<td>Age</td>
<td>Team members solution focused communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership Style</td>
<td>Gender</td>
<td>Team members counter-productive communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership Style</td>
<td>Tenure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Team Meeting Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Lehmann-Willenbrock et al. (2015): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td>To measure Transformational Leadership Style, the Authors used a German version of the 22 items found in the Transformational Leadership Inventory (Podsakoff, MacKenzie, &amp; Bommer, 1996). Transformational leadership style was assessed by using independent observers viewing the video tapes of the team meetings.</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Authors videotaped seventeen regular Team Meetings from 30 different teams from the Automotive supply and medium-sized Electronics industries in Germany.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Magni &amp; Maruping (2013): <strong>Definition or Description</strong> - Empowering Team Leadership</td>
<td>The authors measured empowering leadership by adapting Faraj and Sambamurthy (2006) instrument. This included three interrelated dimensions: encourage teamwork, participative goal setting, and encourage self-development.</td>
<td>Improvisation</td>
<td>Empowering leadership</td>
<td>Team performance</td>
<td>Results indicated that transformational leadership style did not directly relate to team members' solution-focused communication. Rather there was an indirect effect of transformational leadership via leaders' solution-focused communication. Authors noted a direct negative link between transformational leadership and team members' counterproductive communication.</td>
</tr>
<tr>
<td>The sample comprised of two large European firms both of which has team-based structure for organizing work. From within those organisations, 269 usable surveys from members of 48 teams formed the basis of this research.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Marks, Zaccaro &amp; Mathieu (2000): <strong>Definition or Description</strong> - Team Leadership (Briefings)</td>
<td>Prior to each performance episode of the war-game, all teams listened to a 5-minute audio briefing recorded by a Confederate posing as the Team Leader. One group received enriched details, the other just received information about the mission goals.</td>
<td>• Leader Briefings</td>
<td>• Mental Models</td>
<td>Team Performance</td>
<td>Results indicated that teams that received enhanced leader briefings had more similar mental models than did control participants. Enhanced leader briefings appeared to prove more valuable for teams confronting routine</td>
</tr>
<tr>
<td>79 three-person teams who were undergraduates from a large mid-Atlantic University played a computer-based war-game simulation</td>
<td>• Team Interaction Training</td>
<td>• Communication Process</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

266
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-managing Teams within three different organisations: a Pharmaceutical company, Food Processing Plant and State University. The sample included 29 Leaders and 265 Team members.</td>
<td>External Team Leadership</td>
<td>Leader Preparation of the Team</td>
<td>Event Novelty</td>
<td>Team Effectiveness</td>
<td>Results indicated that Leader Preparation and supportive coaching were positively related to perceptions of leader effectiveness.</td>
</tr>
<tr>
<td>Authors: Morgeson (2005): Definition or Description - External Team Leadership</td>
<td></td>
<td>Supportive or Active External Coaching</td>
<td>Disruptive Events</td>
<td></td>
<td>Active leadership intervention activities (i.e. active coaching) were positively related to effectiveness when disruptive events occur.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leader Sense Making Activities</td>
<td></td>
<td></td>
<td>The research demonstrated that different forms of leadership are related to perceptions of effectiveness. For example, high leader Preparation becomes critical when novel events occur. In turn, active forms of intervention become critically important when events are highly disruptive.</td>
</tr>
<tr>
<td>Authors: Nembhard &amp; Edmondson (2006): Definition or Description - Team Leader Inclusiveness</td>
<td>Team Leader-Inclusive Behaviours</td>
<td>Psychological Safety</td>
<td>Engagement in quality improvement work</td>
<td></td>
<td>When physician leaders were perceived as inclusive and welcoming of others' ideas and efforts, psychological safety was greater.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Professional Status</td>
<td></td>
<td></td>
<td>Low leader inclusiveness was associated with a greater disparity in psychological safety.</td>
</tr>
<tr>
<td>Authors: Pearce &amp; Simms (2002): Definition or Description - The authors examined five types of leader behaviour: two of which included transformational and empowering leadership</td>
<td>Team Member perceptions of leader behaviour exhibited by respective team leaders and team members were elicited with a leader behaviour questionnaire which was developed by the authors.</td>
<td>Vertical team leader behaviour</td>
<td>Team size</td>
<td>Team effectiveness</td>
<td>The most important finding of this research was that shared leadership was found to be an important predictor of team effectiveness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared team leader behaviour</td>
<td></td>
<td></td>
<td>Overall, the results show that shared leadership explained more variance than vertical leadership.</td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership</td>
<td>Distributive justice</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership</td>
<td>Procedural justice</td>
<td>Trust</td>
</tr>
<tr>
<td>Authors: Pillai &amp; Williams (2004): Definition or Description - Transformational Team Leadership</td>
<td>Transformational Leadership was measured by using Podsakoff et al. (1990) Questionnaire.</td>
<td>Transformational Leadership</td>
<td>Cohesiveness</td>
<td>Self-Efficacy</td>
<td>Commitment Internalisation</td>
</tr>
<tr>
<td>Authors: Pillai, Schriesheim &amp; Williams (1999: Definition or Description - The authors focused this research on transformational team leadership. These were defined as leaders who motivated their followers to perform beyond expectations by activating followers’ higher order needs, fostering a climate of trust, and inducing followers to transcend self-interest for the sake of the organisation</td>
<td>Transformational Leadership was measured by assessing the five revised four-item transformational sub-scales derived from Bass &amp; Avolio (1991) MLQ.</td>
<td>Transformational Leadership</td>
<td>Job satisfaction</td>
<td>Organisational commitment</td>
<td>The authors found evidence for linkages between transformational leadership and procedural justice.</td>
</tr>
<tr>
<td>Authors: Pirola-Merlo et al. (2002): Definition or Description - Transformational Team Leadership</td>
<td>Seven items from the Vision and Pride Leadership scales from Bass’s (1985) Multifactor Leadership Questionnaire (MLQ). In addition, they used two aspects of the</td>
<td>Team Climate</td>
<td>Team Performance</td>
<td>Team leadership</td>
<td>Obstacles</td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>project Leadership Questionnaire (Bain &amp; Mann 1997) positive working relationships among team members.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Schaubroeck, Lam &amp; Cha (2007): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td>Transformational Leadership was measured with the 23-item scale developed by Podsakoff et al. (1990).</td>
<td>Transformational Leadership</td>
<td>● Team Collectivism  ■ Team Power Distance  ■ Team (Branch) Performance</td>
<td></td>
<td>● The authors found that transformational leadership was associated with superior team performance.  ■ This relationship was mediated by team potency.  ■ Transformational leadership influenced team potency and, consequently, team performance among teams that were high in power distance and high in collectivism.</td>
</tr>
<tr>
<td>Authors: Schippers et al. (2008): <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td>Transformational Leadership was measured using six items based on Den Hartog et al. (1997).</td>
<td>Transformational Leadership</td>
<td>● Shared Vision  ■ Team Reflexivity</td>
<td>Team Performance</td>
<td>This study found the following relationships:  ■ a relationship between transformational leadership and team performance.  ■ a relationship between transformational leadership and team reflexivity.  ■ a relationship between transformational leadership and a shared vision.  ■ results suggested that transformational leadership is related to a shared vision among team members, which is in turn related to increased team reflexivity.</td>
</tr>
<tr>
<td>Authors: Shen &amp; Chen (2007): <strong>Definition or Description</strong> - Team Leadership (Concern Orientated or Task Orientated Leadership)</td>
<td>A revised version of the Leader Behaviour Description Questionnaire (LBDQ) (Halpin &amp; Winer 1957) was used in this research.</td>
<td>Leadership Style</td>
<td>● Team Trust  ■ Team Performance</td>
<td>Institutional Trust  ■ Relational Trust  ■ Task Performance</td>
<td>● The study highlighted that the type of leadership in the service and manufacturing industries had a positive effect on team trust.</td>
</tr>
</tbody>
</table>

Authors: Schaubroeck, Lam & Cha (2007): Definition or Description - Transformational Team Leadership

This study focused on 218 Financial Services Teams working in Hong Kong and US offices of a large multinational Bank.

Transformational Leadership was measured with the 23-item scale developed by Podsakoff et al. (1990).

Transformational Leadership
- Team Collectivism
- Team Power Distance
- Team (Branch) Performance

Findings
- The authors found that transformational leadership was associated with superior team performance.
- This relationship was mediated by team potency.
- Transformational leadership influenced team potency and, consequently, team performance among teams that were high in power distance and high in collectivism.

Authors: Schippers et al. (2008): Definition or Description - Transformational Team Leadership

32 teams from 9 different organisations participated in this study. Teams came from IT companies, the Insurance and Banking sector, Government and Chemical industries.

Transformational Leadership was measured using six items based on Den Hartog et al. (1997).

Transformational Leadership
- Team Collectivism
- Team Power Distance
- Team (Branch) Performance

Findings
- This study found the following relationships:
  - a relationship between transformational leadership and team performance.
  - a relationship between transformational leadership and team reflexivity.
  - a relationship between transformational leadership and a shared vision.
  - results suggested that transformational leadership is related to a shared vision among team members, which is in turn related to increased team reflexivity.

Authors: Shen & Chen (2007): Definition or Description - Team Leadership (Concern Orientated or Task Orientated Leadership)

The sample included 206 Service and 166 Manufacturing industries in Taiwan

A revised version of the Leader Behaviour Description Questionnaire (LBDQ) (Halpin & Winer 1957) was used in this research.

Leadership Style
- Team Trust
- Team Performance

Findings
- The study highlighted that the type of leadership in the service and manufacturing industries had a positive effect on team trust.
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Empowering Leadership</td>
<td>Knowledge sharing</td>
<td>Team performance</td>
</tr>
<tr>
<td>Authors: Srivastava, Bartol &amp; Locke (2006); <strong>Definition or Description</strong> - Empowering team Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The hypotheses were tested through surveys of management teams in a chain of medium-sized hotels.</td>
<td>A total of 102 teams and 389 managers were used as a sample for this analysis.</td>
<td>Empowering Leadership</td>
<td>Knowledge sharing</td>
<td>Team efficacy</td>
</tr>
<tr>
<td>Authors: Strauss, Griffin &amp; Rafferty (2009); <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This research was based on the survey responses from 196 employees in an Australian Public-Sector Agency.</td>
<td>Leadership teams were based on the intellectual stimulation and inspirational communication subscales of the Transformational Leadership measure reported by Rafferty and Griffin (2004).</td>
<td>Transformational Leadership</td>
<td>Team Commitment</td>
<td>Role-breadth Self-efficacy</td>
<td>Organisational Commitment</td>
</tr>
<tr>
<td>Authors: Tung &amp; Chang (2011); <strong>Definition or Description</strong> - Empowering Team Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The authors collected data from 261 team members working within 79 management teams in a major international fast-food chain restaurant operating in Taiwan.</td>
<td>The authors used a 12-item measure adopted from an instrument developed by Ahearne et al. (2005).</td>
<td>Empowering leadership</td>
<td>Knowledge sharing in teams</td>
<td>Team cohesion</td>
<td>Team performance</td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>---------------------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transformational Leadership</td>
<td>Job Satisfaction</td>
<td>A direct relationship between empowering leadership and performance was also supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Visionary</td>
<td>Work Engagement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Personal Recognition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Goal Orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Regulatory Focus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Whitford &amp; Moss (2009); Definition or Description - Transformational Team Leadership</td>
<td>The participants were 165 employees from a broad, random sample of small, medium, and large public and private organisations</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Yun, Faraj &amp; Sims (2005); Definition or Description - Empowering or Directive Team Leadership</td>
<td>The research was conducted at a Trauma Centre of a major Mid-Atlantic Medical Centre in the United States. Completed Questionnaires were received from 91 respondents from the Trauma Centres.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
<td>The researchers developed a series of scenarios to demonstrate Directive and Empowering Leadership from the perspective of the actions of an attending surgeon.</td>
</tr>
<tr>
<td>Type of Team</td>
<td>Measure of Team Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes / Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>-----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Empowering leadership was more effective when a team is more experienced than when a team was inexperienced. • Empowering leadership provides more learning opportunities than does a directive leader.</td>
</tr>
<tr>
<td>Authors: Zhang, Cao &amp; Tjosvold (2011); <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants included 711 members of 144 Unit Management Teams and their corresponding Team Directors and Supervisors. These results were garnered from a large State-owned enterprise in China’s Telecommunication industry.</td>
<td>The authors used a Chinese version of Podsakoff et al.’s (1990) scale to measure Transformational Leadership (Chen and Farh, 1999).</td>
<td>Transformational Leadership</td>
<td>Cooperative Approach to Conflict</td>
<td>Team Coordination</td>
<td></td>
</tr>
<tr>
<td>Team Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Zhang &amp; Peterson (2011); <strong>Definition or Description</strong> - Transformational Team Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multisource data were collected from 79 (n=294 respondents) Business Unit Management Teams within large US Corporations focused on industry’s that produce industrial and consumer products.</td>
<td>Team Leaders’ Transformational Leadership was measured with the follower version of the Multifactor Leadership Questionnaire (MLQ Form 5x–Short; Bass &amp; Avolio, 1995).</td>
<td>Transformational Leadership</td>
<td>Team Mean (core self-evaluation) CSE and Diversity in CSE</td>
<td>Team Performance</td>
<td></td>
</tr>
<tr>
<td>Team Advice Network Density</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Advice Network Centralization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Results suggest that transformational leadership promotes team coordination and thereby team performance by encouraging teams to adopt a cooperative, as opposed to competitive, approach to conflict management.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Zohar &amp; Tenne-Gazit (2008); <strong>Definition or Description</strong> – This study focused on transformational leadership in teams. This was characterised by higher quality leader–member relationships, stemming from the qualifying attributes of transformational leadership. Transformational leaders were seen as fostering closer relationships with subordinates, characterized by small power distance and by individualized consideration of members’ needs and capabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The participants in this study were 1,328 infantry soldiers undergoing</td>
<td>Transformational leadership was measured with a 10-item scale.</td>
<td>Transformational leadership</td>
<td>Density of communication</td>
<td>Climate strength</td>
<td></td>
</tr>
<tr>
<td>Results illustrated a positive relationship between transformational group leadership and climate strength.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

272
<table>
<thead>
<tr>
<th>Type of Team</th>
<th>Measure of Team Leadership</th>
<th>Antecedents (Processes and Emergent States) and Moderators</th>
<th>Outcomes / Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>advanced training in five military boot camps in Israel</td>
<td>taken from the Multifactor Leadership Questionnaire (MLQ-5XRevised; Bass &amp; Avolio, 1997).</td>
<td>Density of friendship network</td>
<td>These results also suggested that transformational group leadership predicted the emergence and subsequent strength of (safety) climate both directly and through mediated and additive effects of the networking among group members.</td>
<td>At the same time leadership did not predict the density of the friendship network.</td>
</tr>
</tbody>
</table>
### Appendix B: Distributed Leadership Research

<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Leadership distribution at the school level. | Research questions included the following:  
- What are the sources of leadership for student learning?  
- What are the focus and goals of leadership beliefs and actions?  
- What actions are associated with leadership for student learning?  
- How is leadership for student learning distributed?  
- How do leadership distribution patterns and actions relate to student learning? | The data for this analysis were drawn from interviews with school personnel in a sub-sample of schools participating in a larger five-year multi-method study of leadership and student learning. Schools were selected for the research from across four states in the United States. The sample included elementary and middle schools; schools in high and low SES settings; and schools in inner city, suburban, and rural settings. | The first phase or research used a teacher survey. This included a set of items designed to measure the relative influence of multiple categories of actors on school decision-making. The second phase of the research involved the collection of qualitative data from our interviews with school personnel. | Results indicated that the overall patterns of leadership could be distinguished between those that were more collective across multiple focuses of improvement and those that were less planfully aligned and more additive. The authors concluded that leadership patterns in schools were clearly associated with the principals' beliefs and orientations. The differentiation in the principal's role in leadership distribution was most likely where the principal claimed expertise in the area targeted for improvement or when they believed that teachers needed to be encouraged and motivated to undertake improvement in student learning. Findings suggested that the search for normative links between specific leadership distribution patterns and student achievement results did not yield clear guidelines for practice. Findings indicated that the potential for collectively distributed leadership action and influence increased when principals and teachers derived school priorities for improvement from shared investigation and consensus on student performance results and needs. |

Authors: Anderson, Moore & Sun (2009) - *Distributed View of Leadership* - In their analysis, the authors drew upon the following key concepts and theories:  
1. Gronn’s (2002) forms of leadership distribution:  
2. Leithwood et al., (2006) conception of core leadership practices:  

Self-managed teams (i.e. project-based, problem-solving and policy-making). | Leadership roles and behaviours required for self-managed teams were divided into four areas:  
- Envisioning  
- Organizing  
- Spanning  
- Social  
It was expected that all four must not only be present in a team but they must also be differentially emphasized | Two case studies of two self-managed teams who both worked in the same division of a rapidly growing electronics firm. | The distributed leadership model was developed from observations and interviews of 15 self-managed teams over a three-year period in New York state. Qualitative grounded theory approach was used. This was based on interviews and observation sessions. This article reported on two case studies of two contrasting self-managed teams. | The successful self-managed team had all four leadership resources, leadership surfaced in a non-domineering way, there was a “easy-going” rotation of roles and synergy. In contrast, the second team were missing several key leadership resources, this deficit lead to an inability to resolve member differences, there was competition, flight reactions with people missing meetings and eventually the team broke up without developing a product. |

Authors: Barry (1991) - *Distributed View of Leadership* - Leadership was viewed as a collection of roles and behaviours that can be split apart, shared, rotated and used sequentially or concomitantly. At any one time, multiple leaders can exist in a team with each leader assuming a complementary leadership role.
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>during the various phases of the team’s life.</td>
<td>The researchers’ primary question was what are principal’s perspectives on shared governance and shared governance leadership in schools?</td>
<td>The data collected for this research were drawn from a qualitative study of principals in nine schools affiliated with Glickman’s League of Professional Schools, Georgia, in the USA.</td>
<td>The authors used grounded theory to analyse information collect through open ended interview questions which focused on the nature of shared governance leadership.</td>
<td>The results of this research indicated that the shared-governance principals we studied by the authors were highly collaborative, but a major barrier to shared governance was lack of time in general. The shared-governance principals were acutely aware of the potential benefits of conflict and were deeply involved in establishing trust, focusing on student needs, facilitating communication among all constituents, and conveying expectations and limitations.</td>
</tr>
</tbody>
</table>

**Authors:** Blasé & Blasé (1999): Distributed View of Leadership - The authors stated that consistent with guidelines for grounded theory inquiry, no a priori definitions of shared-governance leadership were used to direct data collection.

This study explored the leadership of nine principals in schools.

**Authors:** Brown & Gioia (2002): Distributed View of Leadership - “Distributive leadership” is distinctive from distributed, shared or relational leadership. In this case leadership was distributed across the top management team (TMT) itself and did not extend further too many other employees. Therefore, the distributive view focused mainly on the characteristics of shared leadership within the top management echelons.

**Top management team.**

- How are leadership activities such as setting vision, fostering commitment and identification and promoting organisational learning are best accomplished in Dotcom organisations?

A TMT in a dotcom organisation which was an internet unit of a large Fortune 500 company.

This research adopted an interpretive approach. The authors interviewed and tracked the president and members of a top management team. Interview data was systematically analysed using “open coding” techniques.

The authors gave the following insights into the character of leadership in the e-business environment:

- Leadership is heavily influenced, integrated and defined by context. The TMT operated in a dynamic environment which is characterised by speed, ambiguity and complexity.
- This dynamic environment meant that the TMT needed to prioritise managing the organisations identity and build capacity by developing a learning organisation.
- “Distributive leadership” emerged strongly from within the research findings. The leadership responsibility was distributed across the TMT. At the same time, it was essentially confined to the organisations TMT with few other employees being included within the leadership circle.

**Authors:** Buchanan et al. (2007): Distributed View of Leadership - These researches focused on distributed change agency and change leadership. The authors concentrated on Gronn’s (2002) concept of concertive action and highlighted that steps introduced by one individual are developed by others through the “circulation of initiative”.

At the level of an organisation, in this case a hospital.

How can change be implemented in healthcare organisations by a distributed set of actors?

This research examines the successful implementation of improvements in prostate cancer services at Grange hospital in Britain.

This within-case analysis focused on a single research site and included the use of qualitative information from 21 interviews, document collation and informal discussions.

Distributed leadership was evident in the activities of four sets of actors who intervened over time to successfully implement change in the absence of any formal coordination. During the study period Grange met all nine key targets contributing to the hospital’s star rating. This success was
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| At a team level, nine school Senior Leadership Teams | The authors research questions focused on addressing the following:  
  - What factors are important in recruiting individuals for high-performing leadership teams?  
  - What factors facilitate the establishment and development of high-performing leadership teams?  
  - What factors are important in maintaining a high level of effectiveness in the performance of SLTs?  
  - What are the characteristics, strategies and approaches that are critical to the effective leadership of high-performing teams?  
  - What are the potential pitfalls to be avoided?  
  - What are the implications of this for new head teachers and for the professional development of teams? | This research explored high-performing senior leadership teams (SLT) in nine English schools (four secondary, three primary and two special). | The researchers adopted a multi-methods approach to provide an overview of the work of SLTs in schools. This included observing a meeting of the SLT at each school, interviewing several SLT members and staff and the chair of the governing body at each school. They also scrutinised SLT documents. | Evidence from the nine case studies supported the notion that effective teams distribute leadership among SLT members, in ways which give them a strong collective overview of teaching and learning, and of pastoral issues. The authors illustrate their argument that team structures are increasingly linked to notions of distributed leadership by suggesting that distributed leadership is linked to the size of leadership teams, that effective leadership teams “scheduled time together for professional dialogue” and emphasise the importance of interpersonal relationships within teams. |

Authors: Bush & Glover (2012): Distributed View of Leadership - This research focused on high performing teams. It was premised on the belief that leadership is shared and spread and there is greater responsibility and accountability within flatter organisational structures.

At the level of the elementary school. | The authors explored the following questions:  
  - Did comprehensive school reform (CSR) schools have a greater number of formally designated leadership positions when compared with the non-participating schools? | A sample of 114 elementary schools was selected from a larger data set collected as part of the 2002 Study of Instructional Improvement. This sample included schools from 45 different school districts in 15 different states and in 17 | Data came from two instruments: the School Leader Questionnaire (SLQ) and the School’s Characteristics Inventory (SCI). | The authors “tentatively advance” the notion that the CSR programs may configure leadership in schools differently when compared to non-participating schools. After controlling for all the other variables in the analysis, principals were reported to have engaged in higher levels of leadership on each of the three leadership functions under study than incumbents in any other position. |

Authors: Camburn, Rowan & Taylor (2003): Distributed View of Leadership - Distributed leadership is used as an analytical framework to focus on whether and in what form leadership is distributed in elementary schools.
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>How were leadership functions distributed across the formally-designated leadership positions in these CSR schools? Did the schools participating in the CSR program display the widely-distributed pattern of instructional leadership that research suggests promotes successful programmatic change and instructional improvement?</td>
<td>different metropolitan areas in the United States. The study group included schools undertaking the (CSR) program. CSR intervention schools were then set against “comparison” schools in the same geographical regions. The authors concluded that elementary school leadership was provided by teams of individuals. The results indicated that these teams were typically small, ranging from three to seven people and usually heterogeneous in terms of the various leadership functions performed by the individual team members.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Chang (2011): Distributed View of Leadership - Distributed leadership activities were actions and influence dispersed to all or most of the members within a school.

At the school level

The author explored the relationships between distributed leadership, teachers’ academic optimism and student achievement in learning.

This study was based on public elementary schools in Taiwan using stratified sampling. The target population consisted of 1500 teachers randomly selected from 100 elementary schools within the 12 districts in Taiwan. 1003 valid questionnaires were returned.

The research instrument used was “The Elementary School Distributed Leadership Scale”. This instrument included three dimensions that looked at open leadership, situational atmosphere and dynamic participation.

It found that the formation of distributed leadership practice and teacher academic optimism facilitated student achievement of learning outcomes. His study found that elementary school teachers’ perceptions of current distributed leadership and teachers’ academic optimism were high.

**Authors:** Currie, Grubnic & Hodges (2011): Distributed View of Leadership - The authors referenced Gronn’s (2002) concertive and conjoint action. They also emphasised that distributed leadership may vary from “strong” where no single person is in charge, to “middle” where leadership represents a constellation and finally to “weak” in which there is a distinction between the formal leader and followers.

The first case study examined an initiative across 10 local government organisations. The second case study focused on partnerships which cut across public and private sector domains.

The authors explored how organisational context interact with the implementation of networks and distributed leadership to produce desirable outcomes in public services settings?

This study took place in English local government and examined two cases which display some similarity. The first is “Alpha-shire” in which an e-government partnership was formed between one county council, eight boroughs and one unitary authority.

The second examined a regeneration partnership established between public, not-for-profit and private sectors to regenerate a deprived northern part of an English city (i.e. Alpha City).

This comparative case study focused on research design that was qualitative and based on:

- “Alpha-shire”: 13 interviews and the examination of documentation such as minutes of meetings.
- “Alpha City”: 25 interviews with documentation also collected.

Within case analysis focused upon the emergence of leadership and network forms as an outcome of context (antecedent) and the effect of formal interventions to engender leadership (process).

Results showed that the development of strong distributed leadership was hampered by bureaucracy, a strong centralised performance management policy and power disparities between network participants. The authors described this as a more parsimonious or weak form of distributed leadership which was “devolved” or “shared” rather than being “collective”.

277
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| This research examined distributed leadership in a school district in the UK. | The authors explored how institutional forces in an organisational field impact on the enactment of distributed leadership? They also focused on how the immediate organisational environment influence the relative impact of institutional forces on the enactment of distributed leadership in organisations? | The data for this study were gathered from 30 secondary schools in the Nottinghamshire area of England. | This study employed a qualitative approach which was based on data gathered through interviews. Where possible both principals and their deputy or assistant were interviewed in each school. This resulted in a total of 51 interviews. | The analysis supported that competing institutional forces simultaneously foster and impede the adoption of distributed leadership. Principals needed to negotiate between contradictory institutional pressures which meant that where enacted, distributed leadership was limited in scale and in scope. There was little evidence ofconcertive action associated with the “strong” form of distributed leadership. Instead a “weak” form prevailed in which the principal retained the ultimate responsibility and ascribed some managerial responsibilities to “lower rank”.

Authors: Currie, Lockett & Suhominova (2009): Distributed View of Leadership - The authors defined distributed leadership as concertive and conjoint action (Gronn 2002) of a group or network of individuals.

At the organisational school level. | The aim of this study was to: (i) Establish how much disparity in pupil outcomes is accounted for by variation in the types qualities, strategies, skills and contexts of school leadership (ii) Determine the relative strengths of the direct and indirect influences of school leadership, especially that of the head, upon teachers and upon pupils’ outcomes. | This report focuses on a three-year research project which was commissioned by the Department for Children, Schools and Families (DCSF) in conjunction with the National College of School Leadership (NCSL) in England. The sample of schools was selected based on “value added” and pupil attainment and school contextual data. There were two sets of data collected with a total of 979 Primary and 1079 Secondary school staff surveyed. | The authors used a mixed method research design which included a quantitative strand that examined: • An analysis of data on school performance • Questionnaires sent to heads of school, staff and Year 6 and Year 9 pupils in 20 case study schools. • Qualitative information was also gathered through interviews with heads and staff. | Findings from this large body of research were quite extensive. Those findings that focused on aspects of the distribution of leadership included the following: • There were positive associations between the increased distribution of leadership roles and responsibilities and the continuing improvement of pupil outcomes. • School leaders improved teaching and learning indirectly and most powerfully through their influence on staff motivation, commitment and working conditions. • Head teachers were perceived as the main source of leadership by key staff.

Authors: Day et al. (2009): Distributed View of Leadership - The authors did not support or emphasise a theoretical stance. Rather, they emphasised that leadership distribution was common in schools and that the “distribution of leadership” responsibility and power typically varied in response to conditions or challenges found at different times and in different settings in schools.

Project teams- Quality Teaching Action Learning Projects | The authors sort to investigate the conditions influencing teachers’ implementation of an inquiry-based approach to action learning. The authors specifically explored how distributed leadership facilitated and was an outcome of the Quality Teacher Action Learning projects. | Data were provided through individual project progress reports, journals, interviews and case studies. The evaluation encompassed 50 projects at 82 NSW public schools: nine of these schools were selected and visited for case study by members of the evaluation team. | This research focused on evaluating through action learning. | Results indicated the following: • support from the principal (and other leaders) was essential. • a credible, suitable leader for the project was vital. • successful projects were characterized by effective teams and team building and • distributed leadership was both a factor in the success and an outcome of action learning.

Authors: Dinham, Aubusson & Brady (2008): Distributed View of Leadership - The authors emphasised the importance of Gronn’s (2002) holistic, collaborative and participative forms of distributed leadership developed and exercised by teams.
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| At the level of a large organisation, the National Health Services. | The authors explored relationships between patterns of distributed leadership, on the one hand, and the progress of specific change initiatives designed to improve the quality, safety, and outcomes of hospital care for patients. | The authors research questions consider the impact of change leadership on service improvement in the National Health Services in the UK. | The authors used three data sources: 160 semi-structured interviews, observation at meetings, and document analysis. They focused on ten cases each involving a selected national priority for improvement in health services. | Results indicated the following patterns:  
- Widely distributed change leadership enabled service improvement.  
- Hybrid roles and activities played a significant part enabling coordination and collaboration across boundaries and within organisations.  
- Distributed leadership was founded on good quality relationships. |
| The leadership distribution across schools and districts. | This research sought to explore how leadership was distributed within school districts by addressing the following three questions:  
- How do districts influence teaching practice?  
- How do teacher leaders influence teaching practice?  
- What is the relationship between teacher leaders and districts in educational change efforts? | This research drew on a large-scale study conducted at the Centre for Educational Policy Analysis (CEPA) at Rutgers University of schools partnered with the New Jersey Math Science Partnership (NJ MSP). This investigation examined case studies of four schools in three school districts. All the schools were poor, and they varied in their demographics, although most students were Latino or African American. | In each school, an average of eight teachers were interviewed along with principals and teacher leaders. Data were collected in each school through observation, interviews, and document analysis. Data also included two interviews with a principal and teacher leaders.  
In 2006, district math and science supervisors were also interviewed, using semi-structured open-ended questions. | This exploratory study analysed the relationship between district and teacher leaders. It provided two insights into how leadership was distributed.  
Firstly, research findings indicated that teacher leaders complemented district leadership efforts by participating in some of the same leadership tasks, but they engaged with people in a comparatively less authoritative manner. The teacher leader’s capacity to undertake this complementary leadership role depended upon:  
- How much available time each teacher had to undertake the task.  
- The teacher’s knowledge and expertise.  
- The levels of trust in the group or organisation.  
The second research finding was that districts may have had a greater influence over teaching than had previously been understood. |
| At the level of the organisation-School. | The aim of the fieldwork was to analyse the following:  
- What were the properties and dimensions of the division of leadership labour created by “co-principalship”?  
- How co-principals negotiated their shared role space? | This research project focuses on an investigation of “co-principalship” in a secondary school administered by a Catholic religious order in an Australian state. The college included 660 girls from Years 7 to 12 and approximately 40 full-time staff. | Researchers undertook a field investigation at the college.  
During the fieldwork, observations were made of the co-principals, along with the executive team members.  
Interviews were also undertaken with teachers, parents, administrative staff and students. | The qualitative data provided positive affirmation of the school-wide approach of co-leadership. Co-leadership was an important attempt to institutionalise a culture and practice of distributed leadership. The authors identified five shared work practices that enhanced organisational capability and identity. These practices included paralleling, anticipating, positioning, pooling and retrieving.  
The consequences of this form of distributed leadership fell into two broad themes:  
- |
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What was the impact of “co-principalling” on the leadership perceptions and aspirations of key stakeholders?</td>
<td>• Organisational capability: Shared work practices were valued both as a desirable end and to improve organisational capabilities. For example, sharing fostered equality and it provided for better problem solving.</td>
<td>A range of documents were also examined.</td>
<td>• Identity: The shared responsibility system of a male and female co-principals provided important role modelling for girls and emphasised team work and the effective division of tasks.</td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Hallinger & Heck (2009): **Distributed View of Leadership** - This research examined collaborative and distributed leadership within the context of a school improvement model. Collaborative, shared, and distributed leadership were used interchangeably to refer to leadership that is exercised by the principal along with other key staff members of the school.

Specific individuals across the school.

- **Research questions addressed the following areas:**
  1. Can state policy foster the development of school capacity for distributed leadership?
  2. What are the effects of distributed leadership on school improvement processes?
  3. What are the effects of distributed leadership on school learning outcomes?
  4. What are the roles and effects of the principal in developing a broader and deeper capacity for distributed leadership within the school?

- **Data were collected from teachers and students in 200 elementary schools in the United States.** The study drew a random sample (N = 13,391) from a third-grade student cohort that was subsequently observed over a three-year period (i.e., 2004-2006).

- **More in-depth qualitative analysis was also undertaken.** This took the form of follow-up case studies of a subset of 21 high-change elementary schools.

- **The results of this research suggest that state policy does make a difference in the development of a school’s capacity for distributed leadership.**
  - The quantitative results confirmed a relationship between distributed leadership and school capacity for improvement. This broad finding was reinforced by school portraits drawn from the qualitative data.
  - The findings showed an indirect effect of distributed leadership on important school improvement process variables and learning outcomes. That is, changes in distributed leadership were significantly related to changes in school processes which were positively related to growth in student reading and math achievement.
  - Results indicated that principal stability had a small but statistically significant effect on school processes. Having the same principal in the school was also positively correlated with stakeholder perceptions concerning the presence of distributed leadership.

**Authors:** Heck & Hallinger (2009): **Distributed View of Leadership** - The authors conceptualised school leadership as an organisational property and referred to distributed leadership as forms of collaborative practice undertaken by staff and in particular the school’s improvement team.

- **At the level of a school**
  - **The authors focused on two research questions:**
    - What is the relationship between distributed leadership and academic capacity when observed over time?
    - How does distributed leadership impact school improvement capacity and subsequent growth in math?

- **This longitudinal study examined the effects of distributed leadership on school improvement and growth in student math achievement in 195 elementary schools in a western state in the USA over a four-year period.**

- **This research employed a longitudinal nonexperimental design.** The authors captured changes in school processes through surveys given to each school’s teachers on three occasions.

- **Results of this research indicated that in settings where people perceive stronger distributed leadership schools appear better able to improve their academic capacity.** In addition, where academic capacity is perceived to be stronger at one point in time this appeared to be advantageous to the development of stronger leadership over time.

- **Results also showed an indirect leadership effect on learning growth rates.** The findings implied the need to distribute particular types of leadership practices and create a...
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Heck &amp; Hallinger (2010): Distributed View of Leadership - The authors were interested in the distribution of leadership among individuals holding a wide range of organisational roles. They referenced Gronn (2002) - concertive or numerical action.</td>
<td>Specific individuals across the school. The broad goal of the study was to explore the contributions of distributed leadership to school improvement capacity and growth in student learning. The authors advanced three hypotheses for testing with one specifically focused on distributed leadership: Hypothesis 3—leadership effects on student learning outcomes will be indirect, operating through the school improvement capacity construct, rather than direct. This hypothesis reflected the author’s interest in exploring the properties of school leadership within a mediated-effects model.</td>
<td>This research used a longitudinal, multilevel model of change in distributed leadership, school improvement capacity and student performance over a four-year period. A group of 13,391 third grade students within a sample 197 elementary schools in the west of the USA participated in the study.</td>
<td>Non-experimental, post-hoc, longitudinal design. Survey data were collected from students, parents and teachers over a four-year period.</td>
<td>Initial distributed leadership was significantly related to initial improvement capacity. A change in distributed leadership was also significantly related to change in school improvement capacity. The indirect effect of initial distributed leadership on initial reading and math achievement levels was very small. The indirect effects of distributed leadership on growth rates were substantively larger, thereby suggesting that leadership had a potentially important impact on improvement in these school settings.</td>
</tr>
</tbody>
</table>

<p>| Authors: Hulpia &amp; Devos (2010): Distributed View of Leadership - The authors emphasise both the work of Gronn (2002) and Spillane (2006) and describe distributed leadership as a product of conjoint activity that emerges from multi-member organisational groupings acting in concert. | At the level of the organisation-Schools. Hulpia and Devos explored how teacher’s organisational commitment is associated with: • the quality and distribution of leadership functions, • the cooperation of the leadership team and social interaction, and • the participative decision-making of the school team. The authors focused specifically on the distribution of two core leadership functions: • Supporting teachers which involved setting direction and developing people • Supervising teachers. | This study was part of a larger research project undertaken during the spring of 2007 in 46 schools in Flanders (Belgium). The 46 schools were ranked and two sets of four schools were labelled as either high potential or low potential. Information collected from both sets of schools was compared. | This study used a qualitative design and included semi-structured open-ended interviews. In each school, individual interviews were conducted with the principal, at least one assistant principal, a minimum of one teacher leader and focus group interviews with approximately four teachers. In total the authors undertook 34 interviews with 59 respondents. | Findings revealed that the distribution of leadership in the four high and four low potential schools differed considerably. The authors emphasised the importance of the relationship between concertive action of people working together within a pattern of interpersonal relationships and the level of teacher commitment to the school. Findings indicated that it was the cultural-process rather than rational-technical characteristics of the leadership team which were key indicators of teacher commitment. High potential school leaders were visible and accessible and in this environment participative decision-making of the whole school team was encouraged. Based on these findings the authors emphasised that the differences between the two groups of schools had two main origins (a) the accuracy of priorities and (b) the level of problem-solving skills. |</p>
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Hulpia, Devos &amp; Van Keer (2011): Distributed View of Leadership - The concerted action of distributed leadership (Gronn 2002a), is viewed from three different perspectives. The leadership function of different members of the leadership team: the cooperation within the leadership team: the participation of teachers.</td>
<td>Which of the distributed leadership components (i.e. cooperation within the leadership team) are mainly related to teachers’ organisational commitment, taking contextual variables (i.e., years of job experience) into account?</td>
<td>A random sample of 46 secondary schools was selected from Flanders (Belgium). A questionnaire described as the Distributed Leadership Inventory (DLI) was administered to all teachers in the 46 schools and 1,522 teachers effectively completed the questionnaire.</td>
<td>The DLI instrument was designed to measure the following: the quality and the distribution of the supportive and supervisory leadership functions: the cooperation within the leadership team: participation of all school members in decision making and the level of organisational commitment.</td>
<td>Research findings indicated that the teachers’ individual perceptions of the quality of support and the level of cooperation within the leadership team are of prime importance for the degree to which teachers will identify with and get involved in the school. While the quality of the support teachers received was crucial for teachers’ organisational commitment, the effect of different sources of the leadership function was limited. For example, while the support from the principal and the assistant principal were statistically related to the teachers’ organisational commitment, the magnitude of that association was negligible. In addition, the support from teacher leaders had no significant association with organisational commitment.</td>
</tr>
</tbody>
</table>

| Authors: Inglis (2004): Distributed View of Leadership - Gronn’s (2002) concertive or numerical action. | The primary research questions focused on the following: Does Distributed Leadership exist in these organisations? Who is involved in the Distributed Leadership? How does it work in practice? | Four non-profit member benefit organisations. Sporting Club Youth Organisation Self-Help Association Association of Professionals | Qualitative Research Interviews Secondary Sources such as newsletters etc. | • In the entire organisation, distributed leadership was characterised as concertive action between two or more leaders. |

<p>| Authors: Inglis &amp; Sarros (2003): Distributed View of Leadership - The authors focused on Gronn’s (2002) –concertive action: Spontaneous collaboration - Intuitive work relations - Institutionalised practice | Whole umbrella organisation for approximately 3,000 small community groups. Research questions included the following: Does distributed leadership exist? Is distributed leadership numerical or concertive action? If it is concertive action is it spontaneous, intuitive and/or institutionalised? How do interdependence and/or coordination work in practice? | An Australian community based, volunteer, non-profit association-Early Childhood Recreation Association. | Qualitative Case Study. | Distributed leadership did exist in the organisation, but it was confined to the executive team. There was no evidence of numerical action. However, concerted action was evident among the three members of the executive team. There was evidence of both intuitive and institutionalised concertive action within the executive team. The executive team demonstrated complementary interdependence and high levels of coordination. |</p>
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student engagement is viewed as an outcome of both principal and teacher leadership with this relationship being moderated by family educational culture.</td>
<td>The authors researched the following areas: What is the relative influence on the school of the leadership offered by those in different roles? How much of the variation in school conditions and student outcomes is accounted for by teacher as compared to principal leadership? Does the total amount of leadership exercised in a school account for significant variation in school conditions and student outcomes?</td>
<td>This research focused on a large school district in a Canadian province. The district served a population of approximately 58,500 urban, suburban and rural students. Schools in the district employed a total of 4,456 teachers and 201 principals and vice principals in 100 elementary and 16 secondary schools.</td>
<td>This research was a large scale quantitative study. Data concerning leadership, school conditions, student engagement and family educational factors were collected through surveys. Results of the survey were analysed using several forms of multivariate statistics.</td>
<td>The effects on student engagement of both sources of leadership (principal and teacher) are substantially moderated by family educational culture. Neither principal leadership nor teacher leadership had statistically significant effects on student engagement. Teacher leadership effects far outweighed principal leadership effects before considering the moderating impact of family educational culture. Teacher leadership effects remain commensurate with the strength of principal leadership effects when the moderating impact of family educational culture is considered.</td>
</tr>
</tbody>
</table>

| Authors: Leithwood & Jantzi (2000): Distributed View of Leadership | | | |

| Authors: Leithwood & Mascall (2008): Distributed View of Leadership | | | |

<p>| Research focus included addressing the following areas: What was the impact of collective leadership on key teacher variables and on student achievement? What was the relative influence on school decision making of each individual or group included in the measure of collective leadership? Were the differences in patterns of collective leadership related to differences in student achievement? | This study used a sub set of data from a larger body of research (Learning from Leadership). The sample included survey responses from 2,570 teachers from 90 schools, in 45 districts which were selected from 9 states in the United States. | Data used to measure student achievement across all schools was collected from State Department Web sites. Responses to 49 items from a 104-item survey administered to teachers provided the data for this research. | Collective leadership had significant direct effects on all teacher variables. The strongest effect was found on teachers work settings, followed by teacher’s capacity and then motivation. Collective leadership had a modest but significant indirect effect on student achievement. The influence of collective leadership on students is through the variable teacher motivation and work setting. School decisions were found to be influenced by a broad array of groups and people in schools. This reflected a distributed leadership concept. Teachers in higher-achieving schools attribute higher levels of leaderships to all people and groups than do teachers in lower-achieving schools. Even though a greater amount of leadership influence was attributed to people who do not have formal leadership roles, those in traditional leader roles are perceived to have the same relative amount of influence The pattern of leadership was described as an intelligent hierarchy which reflects the combination of both hierarchical and heterarchical patterns. | |</p>
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| **Authors:** Leithwood et al. (2007): *Distributed View of Leadership* - The author’s conception of distributed leadership patterns is founded upon and extends Gronn’s three holistic forms (spontaneous collaboration, intuitive working relations and institutionalized practice). | The distribution of leadership within eight schools and in the district of Ontario. | This study aimed to provide systematic evidence in response to the following questions:  
- What are the differences in patterns of leadership distribution?  
- Who performs which leadership functions?  
- What are the characteristics of those in non-administrative roles performing leadership functions?  
- What factors assist or inhibit the development of distributed leadership?  
- What are the outcomes of distributed leadership including both organisational effects and effects on student learning? | This study was conducted in a large urban/suburban district in southern Ontario Canada. Schools in this area served more than 100,000 increasingly diverse students in approximately 25 secondary and 140 elementary schools. Eight schools were selected for the first phase the study. | Results uncovered many instances of “planful alignment”. Some of the evidence suggested that the effective distribution of leadership to teams of teachers in a planfully aligned structure depends on the regular monitoring of progress by the principal. Results allowed the authors to identify specific leadership functions performed by each of three groups of leaders. |
| **Authors:** Lindgren & Packendorff (2011): *Distributed View of Leadership* - From the authors perspective, distributed leadership implied that leadership was studied as a process of social interaction, involving several individuals who continuously construct leadership activities together. | At the level of a R&D project team  
In relation to the R&D project leadership the authors explored the following:  
- How is leadership practised in everyday work?  
- What are the instances and modes of leadership interactions?  
- What are the contents, activities and outcomes of leadership practices and interactions?  
- How are leadership practices and interactions linked to creativity, innovation, entrepreneurship and performance improvement?  
- How are societal notions of leadership brought into practices | The authors applied a distributed leadership perspective in the analysis of a product development project in a small biotechnology venture. | The study was based on recurrent interviews, participant observation and documentation, with a focus on the narratives articulated by the actors. | The authors interpretation of the empirical themes lead them to conclude that a distributed leadership perspective on R&D project work implies an emphasis on the construction of issues, responsibilities and identities. The authors found that actors spent considerable interaction time in defining and processing issues and this was an integral part of everyday leadership interactions. Secondly, there were also ongoing discussions on the practical implications and areas of responsibility. Finally, an important part of leadership activity at BioCorp was the ongoing identity construction processes undertaken by actors. |
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| and interactions in the local/cultural context? | The authors included several specific items within a broad survey of teachers. These items measured shared leadership by asking questions about the degree to which:  
- Teachers have significant input into plans for professional development and growth  
- School principal(s) ensure wide participation in decisions about school improvement | The authors focused on the impact of distributed leadership on student achievement and the professional community of staff | The research was based on surveys feedback from 5,153 teachers from across the 291 schools and 83 school districts in the USA | The findings of the authors PATH ANALYSIS suggested that shared leadership practices had an indirect relationship through “professional community” on instructional improvement and student achievement. The authors concluded that when principals and teachers share leadership, teachers working relationships are stronger and student achievement is higher. |

**Authors:** Louis et al. (2010): Distributed View of Leadership - The authors defined distributed leadership as broadly denoting a teacher’s influence over and their participation in, school-wide decisions with principals.

This research focused on distributed leadership in schools.

<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Whole School. | Researchers focused on the following:  
- Who participates in leadership distribution?  
- What patterns does leadership distribution take?  
- How is responsibility for “core” leadership functions distributed? | Elementary and Middle Schools in high and low SES settings and inner-city and rural environments in four states in the USA. | Qualitative Research  
- Teacher Survey  
- Interviews of School Administrators and Teachers | Three overall patterns of distribution:  
- Principals were seen to exercise influence in planful collaboration with influential school-based teacher leaders and with outside sources. (holistic pattern of leadership distribution).  
- Principal’s influence extended across various focal points of school improvement, but the evidence was less robust for influence sources of teacher leaders and for collaboration between the Principal, teachers and external agents.  
- Principal interacted administratively with various points of School improvement activity but had little influence on implementation. (additive pattern of leadership distribution).  
- No claims about the relationship between student learning and school leadership distribution could be made based on evidence derived from the five Schools. While there are many sources of leadership in schools, principals remain the central source. |

**Authors:** Louis et al. (2010): Distributed View of Leadership - The authors referenced Gronn’s (2002) - additive and holistic leadership and Mulford, Silins and Leithwood (2004) planful and spontaneous alignment, spontaneous misalignment and anarchic misalignment.
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Louis et al. (2009): Distributed View of Leadership</td>
<td>- The author’s view of distributed leadership was based on the work of Scribner et al. (2007) and Spillane et al. (2001). This perspective sees distributed leadership as the sharing and spreading of leadership work across individuals and roles throughout the school organisation.</td>
<td>The author’s research framework emphasised the importance of antecedents and/or moderators that may influence the distribution of leadership. Based on this framework, the authors proposed two questions for investigation: 1. What school conditions cause teachers and administrators to ignore or try to make sense of current efforts to change leadership patterns in high schools? 2. Does the current call for distributed leadership constitute a strong or weak potential disruption to the current “grammar of schooling” in secondary settings?</td>
<td>All schools were visited for three-to-five days each year by one of the authors. During those visits, approximately 15 key staff were interviewed at each school and central office. Whenever possible, researchers also observed distributed leadership practice and analysed documents relating to the distributed leadership initiative. A thematic analysis of the qualitative data was used to search for evidence of ways that sense making and trust might relate to distributed leadership development.</td>
<td>The author’s findings were presented in the form of two contrasting case studies. One study was presented as a “positive” case which illustrated the processes of sense making, the conditions of trust and the development of distributed leadership over a three-year period. In contrast the “negative” case demonstrated the limits of low trust on sense making processes and the impact this had the development of distributed leadership. The authors also concluded that high levels of trust were likely to promote or positively amplify how people make sense of the design characteristics of distributed leadership in schools. Alternatively, low levels of trust were likely to suppress or negatively affect perceptions. The role of key administrators was viewed as particularly important in determining how teachers make sense of a distributed leadership initiatives in schools.</td>
</tr>
<tr>
<td>Individual respondents were the unit of analysis.</td>
<td>The scholars examined the following questions: 1. Key beliefs predispose teachers’ choices of leadership distribution patterns in which to engage. 2. High degrees of academic optimism are associated with planned approaches to leadership distribution. 3. Low levels of academic optimism are associated with unplanned approaches to leadership distribution.</td>
<td>The framework for this study consisted of a set of teacher beliefs considered antecedent to a school’s patterns of leadership distribution, four distinct patterns of leadership distribution, and an outcome variable labelled “academic optimism.”</td>
<td>Evidence for this research was gathered as part of a three-year mixed-methods study of distributed leadership. The study was conducted in one large school district in Ontario, Canada. A total of 1640 teachers responded to one of two forms of an on-line survey.</td>
<td>Teachers varied widely in their perceptions of the patterns of leadership distribution in their schools. Planful alignment was the pattern of leadership distribution most associated with beliefs about a positive school culture. Higher ratings of spontaneous alignment, spontaneous misalignment and anarchic misalignment patterns of distributed leadership were associated with lower ratings of academic optimism.</td>
</tr>
<tr>
<td>Authors: Mehra et al. (2006): Distributed View of Leadership</td>
<td>Distributed leadership is a phenomenon in which there can be several leaders operating in a team at any one time.</td>
<td>The focus was on the emergent network of</td>
<td>The researchers explored whether:</td>
<td>The means for team sales and satisfaction were not significantly higher for teams that had distributed leadership.</td>
</tr>
<tr>
<td>Level of Analysis</td>
<td>Research Question</td>
<td>Research Focus</td>
<td>Research Method</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>----------</td>
</tr>
<tr>
<td>leadership perceptions within work teams.</td>
<td>• teams with “distributed” leadership structures outperformed teams with a traditional leader-centred structures. • teams with distributed-coordinated leadership structures outperformed both teams with traditional leader-centred leadership structures and teams with distributed-fragmented leadership structures.</td>
<td>the Midwest of the United States. The firm had a total of 88 field-based sales teams. In each team, respondents were provided an alphabetical list of the names of all members in their group and asked to check the names of the people they perceived to be a leader.</td>
<td>within 28 randomly selected field-based sales teams.</td>
<td>Results showed that teams with distributed-coordinated leadership structures achieved significantly higher sales than either the teams that had traditional leader-centred structures or teams that had distributed fragmented structures. The adjusted mean satisfaction scores were also higher in the teams with a distributed coordinated leadership than in teams with a distributed-fragmented leadership structure. However, the adjusted mean for the distributed-coordinated leadership structure was not significantly different from the adjusted mean for the traditional leader-centred leadership structure.</td>
</tr>
</tbody>
</table>

Authors: Moller & Eggen (2005): Distributed View of Leadership - Researchers focused on Gronn’s conceptualisation of distributed leadership practice as “concertive actions”. Consequently, they examine leadership practice as a relational concept which takes place in the interaction of people and their situations.

The distribution of leadership across a school. Scholars explored aspects of successful school leadership practice in ‘beacon schools’ in Norway? The investigation focused on three upper secondary schools in Norway. The schools were in urban and rural locations and of different sizes and structures. Researchers elected a “multi-site case study methodology”. This included interviewing different school personnel, parents, union representatives and individuals with evaluation projects and responsibilities for development. | Formal leadership in the three case studies was described as a team effort. Leadership was viewed as an organisational quality with leadership practice being spread over the work of various formal leaders, teachers and students. The way in which leadership was distributed throughout the three schools was a product of the schools individual historical, cultural, political and social context. The study also emphasised the importance and interrelationship between trust and power within organisations. |

Authors: Mulford, Silins & Leithwood (2004): Distributed View of Leadership - The authors identified two types of distributed leadership: one emanating from the administrative team and the other from teachers. The focus of this research is on school-level factors associated with leadership, organisational learning and student outcomes. | The research project- Leadership for Organisational Learning and Student Outcomes (LOLSO) was conducted in half the secondary schools in South Australia and all the secondary schools in Tasmania, Australia (a total of 96 schools), Phase 1 one of the study incorporated surveys of 3,500 Year 10 students and 2,500 of their teachers and principals. Phase 2 of the study used cross-sectional and longitudinal case studies of best practice. Phase 3, involved the resurveying of South Australian Year 12 students, teachers and principals. In Phase 4, the authors developed and trialled professional development interventions for school leaders. | Research findings indicated that the leadership practices that made a difference in schools was both positional (principal) and distributed (administrative team and teacher). The effects of both these forms of leadership on student outcomes were found to be indirect and were established through organisational learning and the work of teachers. The positional/principal leadership process that had the strongest direct and indirect effect on organisational learning was transformational leadership. Two types of distributed leadership, administrative team and the teacher were both found to contribute directly to organisational learning and indirectly (through |
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Rydenfalt et al. (2015): Distributed View of Leadership</td>
<td>The authors viewed distributed leadership from in the context of “work as done”.</td>
<td>The prime concern of the study was to test whether a distributed leadership approach led to any difference compared to the traditional leadership-centred approach in an operating theatre. The scientific logic applied was one of falsification rather than verification of a previously deduced theory.</td>
<td>The authors used an “explorative naturalistic approach” with data collected from the video recordings of ten surgical procedures. Based on predefined criteria, 248 leadership behaviours were identified and described.</td>
<td>The results show that the leadership behaviours exercised vary considerably between professions and behaviour categories and that leadership in the operating room was considered distributed, rather than being associated with a specific leader. Some of the leadership behaviours included spontaneous sharing of information, initiative and decision making.</td>
</tr>
<tr>
<td>Authors: Scribner et al. (2007): Distributed View of Leadership</td>
<td>The authors viewed educational leadership as a process that involved the practices of multiple individuals and occurred through the complex network of relationships and interactions among the entire staff of the school.</td>
<td>To explore the processes of distributed leadership in teacher teams, the authors collected audiotape and videotape of two teacher teams at a large comprehensive high school in a midsized Missouri community. One team was described as a building professional learning team (PLT). This focused on noninstructional functions, while the other instructional PLT focused on subject disciplines.</td>
<td>Observer field notes and the digital recordings of the PLT meetings constitute the data set.</td>
<td>The authors found three constructs emerged that informed our understanding of collaborative interaction within each professional learning team. These included purpose, autonomy, and patterns of discourse. Purpose and autonomy, manifest as organisational conditions, largely shaped patterns of discourse in the PLT’s that characterize the interaction of the team members. The authors argued that the nature of purpose and autonomy within teacher teams can influence the social distribution of leadership.</td>
</tr>
<tr>
<td>Authors: Silins &amp; Mulford (2002): Distributed View of Leadership</td>
<td>Leadership is viewed as the role of teachers, middle managers and principals. The school was considered as the appropriate unit of analysis.</td>
<td>The school explored if the nature of the leadership and the level of organisational learning in secondary schools contributed to the extent of student participation in school, student academic self-concept and engagement with school.</td>
<td>Analysis involved the formulation of a hypothesised model to test the nature and strength of the relationships between variables. Especially the interaction between leadership, organisational learning and student outcomes.</td>
<td>Findings from this research were extensive and only some of the findings relating to distributed leadership are shown here. The authors concluded that the more transformational school leader’s practices are, then the more active and interested school leaders were in teaching and learning, the more leadership is distributed to teachers and the better the performance of that school in terms of student outcomes (i.e. participation in school, academic self-concept and engagement with school).</td>
</tr>
</tbody>
</table>
Level of Analysis | Research Question | Research Focus | Research Method | Findings
---|---|---|---|---
questionnaire focused on non-academic measures of student outcomes
Phase Two took place in 1999-2000. During this time, non-academic student outcomes were also collected by surveying 1805 Year 12 students in South Australia.
The hypothesised model was tested using latent variables partial least squares path analysis.

Authors: Silins, Mulford & Zarins (2002): Distributed View of Leadership - The authors regard distributed leadership as a quality of organisations. They saw leadership as a ubiquitous characteristic of organisations and inherent in social interactions. As a relational concept, leadership permeated every level of the organisation.

The focus of this research is on school-level factors associated with leadership, organisational learning and student outcome.
What is the relationship between patterns of school leadership, organisational learning and student outcomes?
This research focused on 96 public secondary schools in South Australia (n=50) and Tasmania (n=46).
The first phase of the project used survey data drawn from 2,503 teachers in the 96 secondary schools. This data provided information on the nature of organisational learning, the leadership and management practices of the principal and the schools management team and finally the different sources of leadership in the school.
In the second phase a Participation and Engagement Questionnaire was administered to 3,500 Year 10 students from the 96 schools.
Results indicated that the conditions for organisational learning are the same as the conditions that are associated with the establishment of the three leadership variables examined in this research (principal transformational leadership, actively involved administrative teams and distributed leadership).
Organisational learning is a significant mediator of principal and leadership team effects on teachers work and on student outcomes. However, the distributed leadership dimension is not a significant contributor to student outcomes. In other words, whether all staff had the opportunity to exert leadership in the school was not a predictor of student’s participation in or engagement with school.

Authors: Spillane (2005): Distributed View of Leadership - Distributed leadership was viewed as a framework for thinking about and analysing leadership. A distributed perspective included both a leader-plus and practice aspect.
The distribution of leadership across a school.
The author addressed the following question: Does the structure of primary school leadership look different depending on the school subject?
The study was based in data collected as part of the Distributed Leadership Study. This was a five-year longitudinal study of school leadership in kindergarten to grade 8 schools in the Chicago Public School District. The author used a theoretical sampling technique to select specific schools based This study included a mixed methods longitudinal design including observations, structured and semi-structured interviews, social network questionnaires and the filming of leadership routines.
Research found that there were more central advice givers in literacy compared with mathematics or science. In literacy advice networks, reading specialists and K-2 teachers were the most central advice givers. Advice networks for literacy on average were one third denser than those for maths and were more integrated. School administrators did not figure prominently in subject-specific advice networks. Relational patterns though distinct from formal structures were not independent of it.
<table>
<thead>
<tr>
<th><strong>Level of Analysis</strong></th>
<th><strong>Research Question</strong></th>
<th><strong>Research Focus</strong></th>
<th><strong>Research Method</strong></th>
<th><strong>Findings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Spillane et al. (2009): <strong>Distributed View of Leadership</strong> - Distributed leadership was used as an analytical framework to focus on whether and in what form leadership is distributed in schools.</td>
<td>In conclusion, the author found that the ways in which leaders and followers interact with one another differed by school subject.</td>
<td>The distribution of leadership across a school.</td>
<td>The study was undertaken in a mid-sized urban school district in the South-eastern United States. The original data collection involved 52 principals and 2,400 school personnel. Data from two of the 52 schools was used in this study.</td>
<td>Researchers explored four different operationalization’s of the leader-plus aspect. Their analysis examined how each of these four methods tied the operationalization to the conceptual framework. The various research approaches showed considerable agreement with respect to the individuals over whom leadership is distributed in schools. Of the four approaches, the findings about the distribution of leadership generated by the social network questions differed the most from the findings generated by the other instruments. The authors noted that nearly two-thirds of the formally designated language arts leaders and one half of the formally designated mathematics leaders do not emerge as leaders based on the analysis of the social network data. This finding emphasised the importance of examining the lived organisation. The social network questions suggest that an exclusive focus on formally designated leaders may miss an important measure of how the work of leading and managing schools is distributed over people.</td>
</tr>
</tbody>
</table>

<p>| Authors: Spillane, Camburn &amp; Pareja (2009): <strong>Distributed View of Leadership</strong> - The authors examined distributed leadership from two aspects: The first was described as leader-plus. This recognised that leading and managing schools involves multiple individuals. The second focused on leadership practice as a product of the interactions of school leaders, followers and their situations. | | The authors focused on the following research questions: • Who takes responsibility for leadership and management work in schools? • To what extent does the practice of leading and managing involve co-performance: that is, where two or more leaders co-lead an activity? • What types of leading and managing work are distributed across people? • and involve co-performance? | Two separate studies were evaluated. The first, “The Distributed Leadership Studies”, involved a five-year longitudinal study of elementary school leadership involving 12 Chicago elementary schools. The second evaluated the National Institute for School Leadership (NISL) leadership development program in a mid-sized urban school district in the south-east of the United States. Baseline data was collected from principals and 2400 school personnel in 52 schools. | Researchers found that leading schools is distributed over multiple actors, some of whom are in formal leadership roles, while others hold informal positions. The logs recorded by each principal showed that: • School principals co-performed 48% of the activities they were leading. • The extent to which the process of leading was distributed across two or more actors differed depending on the type of task. • Principals reported leading over three quarters of all administrative activities. • In contrast principals lead just over half of the instructional and curriculum activities. • The extent, to which the work of leading and managing was distributed, differed between schools. |</p>
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Timperley (2005): Distributed View of Leadership | The descriptive outline of Spillane et al (2004) provided an important framework on which to base the analysis of this research. Leadership in schools was viewed as almost inevitably distributed. The important issue becomes how the leadership activities are distributed and the ways this distribution is differentially effective. | The distribution of leadership across elementary schools. | The authors addressed the following questions:  
• How is leadership enacted when it is distributed?  
• What are the conditions under which such distribution is differentially effective if it is to make a difference to instructional practices in schools? | This research studied the leadership processes in elementary schools involved in a school improvement initiative in New Zealand. In this paper, the data used were primarily observational, together with interviews related to those observations. The research took place over 4 consecutive years and involved observations, interviews, and the analysis of student achievement data for each year. Leadership was provided by literacy leaders not principals. Literacy leaders engaged in leadership activities with classroom teachers. These activities assisted teachers to question and change their literacy instruction for those students who were not progressing. This school improvement involved a complex interplay between leadership traits, behaviours, tasks and artefacts which resulted in different leadership activities situated in a context. Findings suggested that increasing the distribution of leadership is only desirable if the quality of the leadership activities contributes to assisting teachers to provide more effective instruction to their students. The quality of the leadership activities cannot be understood in isolation from the situation in which leadership is exercised. |
| Authors: Wahlstrom et al. (2010): Distributed View of Leadership | Distributed leadership was referenced in relation to leadership practices. These included setting directions, developing people, structuring the workplace and managing the instructional program. | Researchers examined distributed leadership at a national level across a school level. | The authors explored the following areas:  
• Which people enact which distributed leadership practices?  
• How do different patterns of leadership enactment emerge?  
• Do variations in such patterns make a difference for certain kinds of schools and students? | Researchers sampled 43 school districts in nine states within the United States. Within those districts information was collected from 180 schools of different sizes, different school levels and with varying student demographics. Researchers collected data twice in each location and each visit was separated by a two-year period. Surveys and interviews were used to collect the necessary information from teachers, principals, other staff members and additional educational stakeholders. The authors also conducted classroom observations and analysed student achievement data. Having examined the distributed leadership practices the authors concluded the following:  
• No single pattern of leadership distribution is consistently linked to the quality of student learning.  
• Leadership for “developing people” and “managing instructions” is more distributed than for “setting direction” and “structuring workplaces”.  
• How leadership is distributed is dependent on what is to be accomplished, the availability of expertise and the principal’s preferences.  
• While there are many sources of leadership, principals remain the dominant source.  
• The bureaucratic allocation of responsibility did not necessarily result in the transfer or development of leadership influence. |
<p>| Authors: Zhang &amp; Faerman (2007): Distributed View of Leadership | These researchers based their agenda on Gronn’s (2002) theoretical framework and defined distributed leadership as direct or vicarious influences attributed voluntarily to one individual, separate individuals, collections of individuals in collaboration, or organisational units by members in the organisations. | At the level of an organisation and Municipal Government Agencies | The authors explored how leadership roles were distributed in the process of this study investigated influential factors that enabled and/or obstructed the case. | Case Study-qualitative research and interpretive methodologies were used when examining data. Research findings indicated that there were three significant leadership roles, Project leader, Upper Management and Champions. These leadership roles dynamically interacted. |</p>
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Research Question</th>
<th>Research Focus</th>
<th>Research Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>developing and implementing a knowledge-sharing system?</td>
<td>development of a knowledge sharing system in New York’s Office of the State Comptroller and associated Municipal Government Agencies.</td>
<td>from 19 interviews, observations and organisational documents.</td>
<td>with one another and were highly interdependent. In addition, interdependence also existed among leaders within a group, such as the executives in the top management team. This case study also demonstrated that in complex environments leadership was distributed and emergent. Different actors emerged as leaders at different points in times, with some actors being more influential than others. The emergent nature of leadership was crucial to the development of knowledge sharing systems.</td>
</tr>
</tbody>
</table>
## Appendix C: Theoretical Research Models and Heuristics

<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared leadership is defined as a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals or both (p. 297).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared Leadership: transference of the leadership function among team members to take advantage of member strengths as dictated by either environmental demands or the developmental stage of the team (p. 105).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared Leadership: a collaborative, emergent process of group interaction in which members engage in peer leadership while working together (p. 53).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Dust &amp; Ziegert (2016)</td>
<td>Teams working in knowledge-intensive complex work environments.</td>
<td>Complex and knowledge intensive work environments (i.e. novel and urgent contexts)</td>
<td>Variants of multi-leader teams: • Dual-independent • Dual-comprehensive • Multi-independent</td>
<td>The authors suggested that as teams move through the different multi-leader constellations then outcomes</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>or behaviours whereby multiple member-leaders exhibit influence on each other, while working towards a common team goal.</td>
<td></td>
<td></td>
<td>Multi-comprehensive</td>
<td>will include increased efficiency, greater diversity of thought, increased backup behaviours and effectiveness.</td>
</tr>
<tr>
<td>Authors: Ensley, Pearson &amp; Pearce (2003)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared leadership: leader behaviour exhibited by team members in aggregate. The team shares and participates fully in the tasks of leadership (p.334).</td>
<td>New Venture Top Management Teams (NVTMT)</td>
<td>Shared leadership</td>
<td>Mediators:</td>
<td>The new venture top management team’s effectiveness and performance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• group cohesion and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• collective vision</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderators:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• perceived risk of opportunity expiration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• perceived risk of financial loss</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• perceived level of ambiguity in the firms’ environment and business concept</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• perceptions of resource scarcity</td>
<td></td>
</tr>
<tr>
<td>Authors: Friedrich et al. (2009)</td>
<td>Teams within organisations which contains a variety of expertise (i.e. project teams, top management teams).</td>
<td></td>
<td>Collective leadership constructs:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Leader structuring and maintenance of the group (e.g. strategic planning, resource management).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Mission (e.g. defined objectives, inspirational, motivation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Team processes (e.g. coordination, cohesion and commitment)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Organisational context and external environment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collective leadership constructs:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Leader skills, leader network and leader/team exchange.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Communication and problem solving</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Team network, team affective climate, team performance parameters.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Team performance capabilities (i.e. information sharing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Immediate outcomes (i.e. levels of trust, productivity)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Long term outcomes (i.e. growth, innovation).</td>
<td></td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
</tbody>
</table>
| **Authors:** Hoch & Dulebohn (2013)** | **The authors described shared leadership as a team level phenomenon where leadership behaviours were engaged in by multiple individuals rather than a designated, formal team leader.** | **The authors presented shared leadership to improve the management and functioning of teams in the enterprise resource planning systems implementation process.** | • Support factors: Information, rewards and perceived team support.  
• Vertical leadership: Transformational leadership, empowerment and LMX  
• Team member characteristics: Self-leadership, locus of control and proactive personality. | • Shared leadership  
• Interdependence  
• Complexity  
• Virtuality  
• Processes: Cognitive, affective and motivational  
• Team performance |

| **Authors:** Muethel & Hoegl (2010)** | **The authors viewed shared leadership as delineating a collective team process through which individual team members share the behaviours and roles of the traditional leader. It entails a simultaneous, ongoing, mutual influencing process within teams to maximize their potential as a whole (p.24).** | **Globally dispersed teams** | **Cultural and societal-country level antecedents of shared leadership included:**  
• Regulatory dimensions  
  o Economic freedom  
  o Civil liberties  
  o Political liberties  
• Learning orientation within a society  
• Normative dimensions of a country’s institutional profile:  
  o Performance orientation  
  o Power distance  
  o Uncertainty avoidance  
  o Assertiveness  
  o Institutional collectivism  
  o Humane orientation | **Shared leadership within globally dispersed professional teams** |

<p>| <strong>Outcomes/Emergent States</strong> | <strong>Not discussed.</strong> |</p>
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authors:</strong> Pearce &amp; Sims (2000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional distance team level antecedents of shared leadership included:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Comparative levels of institutional diversity and country institutional profile.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shared leadership:</strong> exists as a shared group level phenomenon and entails the process of shared influence between and among individuals (p. 116)</td>
<td>Groups and teams in organisations</td>
<td>Group Characteristics (e.g. ability, proximity, diversity)</td>
<td>Shared Leadership Influence:</td>
<td>Group Outcomes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Task Characteristics (e.g. Interconnectivity, creativity, urgency)</td>
<td>• Controlling Leadership</td>
<td>• Group Psyche (e.g. commitment, cohesion)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment Characteristics (e.g. support systems, rewards systems)</td>
<td>o Aversive</td>
<td>• Group Behaviour (e.g. internally directed, externally directed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Directive</td>
<td>• Group Effectiveness (e.g. Quantity, Quality)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Transactional</td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Perry, Pearce &amp; Sims (1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shared leadership:</strong> the team shares and participates fully in the leadership tasks of the team (p. 35).</td>
<td>Empowered Sales Teams</td>
<td>Team Characteristics: (e.g. ability, proximity, maturity)</td>
<td>Shared Leadership Process:</td>
<td>Team Outcomes:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selling Task Characteristics (e.g. interdependence, complexity)</td>
<td>• Transactional</td>
<td>• Affective/Cognitive Responses (e.g. commitment, satisfaction)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Transformational</td>
<td>• Behavioural responses (e.g. effort)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Directive</td>
<td>• Team Effectiveness: (e.g. sales volume, profitability).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Empowering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Social Support</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderator: Vertical Leadership Role (e.g. team design, boundary management)</td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Wu &amp; Cormican (2016)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shared leadership</strong> refers to an emergent team property, whereby leadership influence is distributed among team members</td>
<td>Project Teams</td>
<td>Four phases of a project life cycle:</td>
<td>A Project Life Cycle included the evolution of shared leadership processes</td>
<td>The authors suggest that the optimal level of shared leadership appears in the early</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Initiation phase</td>
<td>• Low density and high centralization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Early phase</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

296
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
</tr>
</thead>
</table>
| Authors: Zhu et al. (2018) | The authors were not prescriptive on a team or group. | • Late phase  
• Close | • High density and low centralization  
• High density and high centralization  
• Low density and high centralization | phase of a project, and when the team advances into later phase, the leadership turns to be more focus on few individuals. |

The authors defined shared leadership as an emergent team phenomenon whereby leadership roles and influence are distributed among team members.
### Appendix D: Shared Leadership Research

<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| **Authors:** Avolio et al. (1996) | Teams were comprised of a total of 248 undergraduate University students who were placed into groups of 7-9 members. These groups were then responsible for completing a service learning project in the community. | Team Multifactor Leadership Questionnaire (Bass and Avolio 1995) | Teams Collective Leadership Behaviours | Group Process Measures:  
- Collective Efficacy  
- Potency  
- Cohesion  
- Trust | Self-reported ratings on:  
- Team Effectiveness.  
- Satisfaction with leadership abilities of the team.  
- Extra Effort. | Team transformational leadership ratings positively correlated with measures of group efficacy, group potency, trust/cohesion, extra effort, effectiveness and satisfaction. |

| **Authors:** Al-Ani, Horspool & Bligh (2011) | This paper used a case study method and evaluated a Fortune 500 IT firm which had development and project teams distributed around the globe. | The authors explored distributed team leadership and used Pearce and Conger’s definition to clarify shared leadership “a dynamic, interactive process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both” (Pearce & Conger, p.1) | Trust between team members. Type and degree of communication leaders provided. | Task complexity. Media richness and interactivity mediated leader behaviour effects. | The authors highlighted that their qualitative approach and interview guide were not designed to understand the effectiveness of shared leadership within distributed teams. | The study highlighted that those individuals who took on the role of team leader varied from one team to the other. Occasionally, the leader included project managers while at other times it was a technical expert who took control at different sites. The authors concluded that distributed teams lead to ‘fuzzy’ leadership roles and there were different types of leaders and different types of leadership emerging. |

| **Authors:** Balthazard et al. (2004) | Both MBA and senior undergraduate university students formed 88 teams | Eight behavioural statements taken from the short form of the Multifactor Leadership | Media- Face to Face or Virtual Teams | • Shared Transformational Leadership (STL) | • Task performance  
• Team synergy  
• Face to face media was positively related to shared | |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>transformational terms, is displayed within a team by its members.</td>
<td>which participated in a 12 week “Ethical Decision Challenge”. Participants in 42 teams completed a paper version of the exercise and engaged in face-to-face discussion. The remaining 46 teams completed a web version and used an online blog (Virtual Team).</td>
<td>Questionnaire (Bass and Avolio 1994) were used to measure transformational leadership behaviours in teams. Each participant was asked to assess each team member by rating the eight transformational leadership statements.</td>
<td>Group interaction styles Group Cohesion</td>
<td>transformational leadership (TFL). Shared TFL was positively related to constructive interaction styles. Shared TFL positively predicted cohesion. The relationship between shared TFL and task performance was not significant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Barnett &amp; McCormack (2012)</td>
<td>Senior Executive Leadership Teams (SELT) comprising of a principal and deputy principals in three comprehensive and co-educational schools in different suburbs in Sydney, Australia.</td>
<td>Data were collected from nine individual face-to-face semi-structured interviews with SELT members.</td>
<td>Team member demographic characteristics Team level, cognitive, motivational, affective and coordination processes. Leadership processes such as direction setting, managing team operations, developing team leadership capacity and shared leadership.</td>
<td>Team performance and team effectiveness.</td>
<td>Shared leadership in the three SELT’s was characterised by transfer of leadership responsibility to take advantage of distributed individual leadership expertise, collaborative leadership and the development of collective leadership expertise. Shared leadership within the SELT was facilitated by the principal’s leadership, team interaction and shared team mental models.</td>
<td></td>
</tr>
<tr>
<td>Authors: Barry (1991)</td>
<td>The author examined 15 self-managed teams: 11 of these were in manufacturing and the remaining four in education</td>
<td>A qualitative, grounded theory approach was used while conducting this research with interviews and observation sessions carried out in an open-ended way</td>
<td>Leadership resources: such as spanning, organizing and envisioning leadership In Team 1, leadership surfaced in a voluntary non-domineering way In addition, team members offered services to one another</td>
<td>In Team 1, members achieved much more than they would have by simply working individually</td>
<td>Team 1 contained all the necessary leadership resources, leadership surface in a voluntary way, there was a supportive culture and the outcome was described as a “truly synergetic effort”.</td>
<td></td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>each leader assuming a complementary leadership role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Team 2 did not have all the key leadership resources with the most pronounced lack being social leadership. The lack of spanning leadership was also evident. Eventually the team disbanded</td>
</tr>
<tr>
<td><strong>Authors:</strong> Berdhal &amp; Anderson (2005)</td>
<td>Participants included 109 undergraduate students in an introductory psychology course at a large Midwestern university. Participants were then allocated to one of 11 groups.</td>
<td>Leadership distribution or centralization was measured by group members indicating how much other members of the team had led group activities.</td>
<td>• Preference for equality</td>
<td>• Leadership centralization</td>
<td>• Group performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Group performance was negatively correlated with leadership centralization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• At Time 2, majority male groups were more centralized than majority female groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• All female teams had relatively decentralised (shared) leadership structures</td>
</tr>
<tr>
<td><strong>Authors:</strong> Bergman et al. (2012)</td>
<td>The authors created 45 teams comprised of 180 undergraduate students from a south-eastern university in the United States of America. The experimental task was a role play involving four students in each team negotiating as a cross functional company taskforce. Each team had the responsibility of developing a product strategy for the following year.</td>
<td>Each team member’s leadership behaviour was assessed by recording and then coding videotapes of the team’s discussions. Individual leadership behaviours were assessed by trained raters. The leadership behaviours included initiating structures, consideration, envisioning and spanning. Shared leadership was measured by considering the number of team members who engaged in the four leadership behaviours and the total amount of leadership</td>
<td>Not discussed</td>
<td>Shared leadership behaviours with multiple leaders demonstrating different leadership behaviours (BARS: initiating structures, consideration, envisioning and spanning)</td>
<td>Levels of • intra-group conflict • consensus building • intragroup trust • cohesion • satisfaction</td>
<td>• Teams that developed a pattern of leadership behaviour that included numerous types of leadership and multiple leaders experienced significantly better intermediate team processes and emergent states.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Teams that displayed shared leadership reported less conflict, greater consensus and higher intragroup trust and cohesion than teams that did not experience shared leadership.</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/ Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>behaviour displayed by the team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Authors: Berry (2004)**

Shared governance or team leadership which was characterised as “much like a marriage”.

This case study examined two areas of shared leadership: one focused on the sharing of leadership responsibility between the physician and hospital administrator. The second explored the relationships between board and the hospital committee system.

This case study within the Mayo Clinic was descriptive and did not measure shared leadership dynamics per se.

There we two dichotomous needs which had to be met by clinicians and administrators. The first had to do with maintaining the quality of patient care and the second the business and financial needs of the hospital. Both these antecedents drive shared leadership practices.

Levels of communication, trust and confidence in the shared leadership partner.

Better patient outcomes and organisational outcomes.

The net effect of the Mayo model of shared leadership and collaboration was that it was seen to converge talent where it was needed, encourage and enable internal communication and foster organisational competence.

**Authors: Bienefeld & Grote (2014)**

The authors observed the leadership of 504 cockpit and cabin crewmembers from a European airline. These formed 84 six-member Multi-team system (MTS) aircrews all of whom participated in standardized simulations of an in-flight emergency.

Leadership was coded by three trained observers using a structured observation system. The authors designed a coding scheme, based on Yukl’s (2006) framework of leadership functions, for the operationalization of leadership capturing 10 distinct and mutually exclusive leadership behaviours.

• Shared leadership

• Boundary spanning between teams (i.e. cabin crew and cockpit crew)

• Team success-cockpit crew goal attainment

• In cockpit crews, leadership was not shared and captains’ vertical leadership predicted team goal attainment regardless of MTS success.

• Successful MTS aircrews displayed significantly more leadership within and across teams in successful MTS aircrews.

• In successful MTS aircrews, leadership across teams predicted cockpit goal attainment beyond captains’ and first officers’ leadership.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taken together, our results suggest that shared leadership by formal leaders and team members can be a powerful predictor for team goal attainment and MTS success and that the role of boundary spanners (i.e., pursers) performing a dual leadership role within and across teams is the key factor in this process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Boies, Lvina & Martens (2010)

The authors defined shared leadership from the perspective of distributed transformational leadership or passive avoidant behaviours in teams.

Data were gathered from 49 teams of undergraduate students (N = 194) who participated in a business simulation. Participants were registered in an upper-level strategy course.

Shared leadership styles were assessed using the Team Multifactor Leadership Questionnaire (Avolio et al., 2003). Transformational styles relied on four distinct but interrelated behaviours: charisma/inspirational motivation, intellectual stimulation, and individualized consideration.

- Shared transformational leadership
- Trust
- Team potency
- Team performance

**Findings:**
- Team potency and trust were positively related to shared transformational leadership.
- Shared transformational leadership was not significantly related to team performance.

**Authors:** Bowers & Seashore (1966)

While the authors did not define shared leadership per se, they described leadership activities in groups as being met by formal leaders, by anyone in the work group for anyone else in the work group, or both.

This study focused on the leadership activities within 40 agencies of a leading life insurance company in Ohio in the United States.

The authors used a questionnaire to measure both relationship and task-oriented leadership behaviours within teams.

- Managers leadership
- Peer leadership
- Team goals and effectiveness.

**Findings:**
- Peer leadership was measured across four types of activity: support, goal emphasis, work facilitation and interaction facilitation. Across these dimensions peer leadership exhibited negative effects with team goals.
- The results appeared to confirm that there was a significant and strong relationship between
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Carson, Tesluk & Marrone (2007) | Researchers examined 59 consulting teams comprised of MBA students from an eastern states university in the United States. | Social Network Analysis, specifically density (total amount of leadership displayed by team members perceived by others). | Internal team environment:  
  - Shared purpose  
  - Social Support  
  - Voice  
 External team environment:  
  - Coaching  
 Control variables:  
  - Team size  
  - Project demands  
  - Gender diversity  
  - Race diversity | Shared Leadership | Team Performance:  
  - Project deliverables  
  - Presentation  
  - Helpfulness | Results indicated that a team’s internal environment and coaching by an external leader were important precursors for shared leadership. Shared leadership was a strong positive predictor of a team’s performance as rated by end users of the team’s work. Team size was found to have a strong positive relationship with shared leadership. |
| Authors: Carte, Chidambaram & Becker (2006) | Data for this research was collected from 22 self-managed virtual teams that participated in a semester long database project as part of an undergraduate course in three different universities located in Oklahoma, Michigan and Maryland (USA). | Messages exchanged between team members were coded according to the number and type of leadership behaviours (innovator, broker, producer, director, coordinator, monitor, facilitator and mentor). A shared leadership score was calculated by dividing the incidents of leadership | Participant demographics:  
  - Age  
  - Work Experience  
  - Grade Point Average  
  - Gender | Leadership behaviours within the team: concentrated or shared. | Performance of each of the 22 teams as assessed by three university “instructors”. | Results showed that the total number of concentrated leadership behaviours and shared leadership behaviours were both significantly different between high and low performing teams. Individuals in high performing teams sent more messages and engaged in significantly more leadership-oriented behaviours in the messages they sent. |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| behaviours with the number of individuals who demonstrated those behaviours in each team. | Team members rated each of their individual peers regarding the extent to which they rely on these individuals for specific leadership support. Leadership density was then computed by aggregating all the actual responses for the team members and then dividing by the total possible number of responses. | • Leader Humility  
• Team proactivity personality | • Shared leadership | • Team task performance | • Among specific behaviours, shared monitoring behaviours were significantly higher among high performing teams. |

**Authors:** Chiu, Owens & Tesluk (2016)

The authors defined shared leadership as a group-level phenomenon generated from reciprocal reliance and shared influence among team members to achieve team goals. The authors research focused on 62 Taiwanese professional work teams. Scholars measured attitudes toward shared leadership by using the 13 items developed by Small (2007). The results showed that shared leadership was positively related to organizing and planning effectiveness in teams.

**Authors:** Choi, Kim & Kang (2017)

The authors defined shared leadership as a distributed leadership style that emanates from the team members. Research focused on 424 respondents working in a variety of Korean financial and insurance firms.

**Authors:** Choi, Kim & Kang (2017)

The authors defined shared leadership as a distributed leadership style that emanates from the team members. The authors emphasised the following findings:

- shared leadership was positively related to team performance
- leader humility facilitated the development of shared leadership in teams by encouraging leading-following interactions among team members
- the interactive effect of shared leadership and team performance capability on team performance was strengthened when teams are composed of highly capable members
- shared leadership bridged the connection between leader humility and team performance when the levels of team proactive personality and performance capability were both high.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authors:</strong> Daspit et al. (2013)</td>
<td>Participants included a group of 142 undergraduate business students organized into 24 cross functional teams in a large university in the southwestern USA.</td>
<td>Shared leadership was assessed using the ten items scale developed by Wood and Fields (2007).</td>
<td>• Internal team environment</td>
<td>• Shared leadership • Cohesion</td>
<td>• Team effectiveness</td>
<td>• The findings of this research indicated that members were more likely to participate in shared leadership roles when they perceive higher levels of shared purpose, social support, and voice. • Team effectiveness was enhanced when individuals engaged in shared leadership. • Shared leadership did not directly influence team cohesion.</td>
</tr>
<tr>
<td><strong>Authors:</strong> Dapsit, Ramachandran &amp; D’Souza (2014)</td>
<td>The research focused on top management teams (TMT) from firms in the US software industry. The final dataset contained 129 top managers.</td>
<td>Shared leadership was measured using ten items adapted from Wood and Fields (2007). The items measure the presence of shared leadership within a TMT.</td>
<td>• Shared leadership</td>
<td>• Absorptive capacity</td>
<td>• Team performance</td>
<td>• Results indicated that shared leadership in TMT’s was positively related to the absorptive capacity dimensions of acquisition, assimilation, and transformation. • Shared leadership in TMTs was more effective when tasks were characterised as being critical and urgent.</td>
</tr>
<tr>
<td><strong>Authors:</strong> DeRue, Nahrgagn &amp; Ashford (2015)</td>
<td>This research focused on a sample of 255 consulting teams composed of MBA students from a large university in the midwestern United States</td>
<td>Leadership emergence was assessed at an individual level using a four-item measure developed by Lord et al. (1984). Individuals were asked &quot;The amount of leadership exhibited&quot; by each other team member.</td>
<td>• Perceived warmth • Perceived competence</td>
<td>• Not discussed</td>
<td>• Leadership Density • Leadership Centralization</td>
<td>• The authors found that a dense pattern of warmth perception predicted an increase in the emergence of leadership density. • Conversely, a centralized pattern of competence perceptions at the group level is associated with an increase in the emergence of more centralized leadership structures.</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/ Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Authors: D’Innocenzo, Mathieu &amp; Kukenberger (2016)</td>
<td>Shared leadership is an emergent and dynamic team phenomenon whereby leadership roles and influence are distributed among team members.</td>
<td>The authors established several selection criteria that included: research articles needed to include measures of both shared leadership and team performance: teams used in each sample had to have multiple leaders during the study time frame: teams needed to have engaged in some form of shared leadership: finally, articles needed to report statistical information needed to compute effect sizes.</td>
<td>• Shared leadership</td>
<td>• Degree of team interdependence</td>
<td>• Team performance</td>
<td>• The authors found a significant positive relationship between shared leadership and team performance.</td>
</tr>
<tr>
<td></td>
<td>The authors used a meta-analysis of 3,198 teams from both published and unpublished studies (team n = 3,198).</td>
<td></td>
<td></td>
<td>• Task complexity</td>
<td></td>
<td>• This analysis indicated that the network concepts of density and distribution (i.e. decentralization) both provided significantly higher correlations when compared to aggregation techniques of shared leadership.</td>
</tr>
<tr>
<td></td>
<td>The authors used a meta-analysis of 3,198 teams from both published and unpublished studies (team n = 3,198).</td>
<td></td>
<td></td>
<td>• The type of measurement used to assess shared leadership and team performance</td>
<td></td>
<td>• The authors also found teams sampled from classroom and laboratory settings yielded lower average effect sizes as compared to teams sampled from field settings.</td>
</tr>
<tr>
<td></td>
<td>The authors used a meta-analysis of 3,198 teams from both published and unpublished studies (team n = 3,198).</td>
<td></td>
<td></td>
<td>• Sample sizes</td>
<td></td>
<td>• Results also indicated that the complexity of team tasks related negatively to the magnitude of shared leadership–performance relations.</td>
</tr>
<tr>
<td></td>
<td>The authors used a meta-analysis of 3,198 teams from both published and unpublished studies (team n = 3,198).</td>
<td></td>
<td></td>
<td>• Type of sample</td>
<td></td>
<td>• Lastly, the findings also highlighted that the relative effect sizes of density and centralization of shared leadership did not differ significantly from one another.</td>
</tr>
<tr>
<td>Authors: Drescher &amp; Garbers (2016)</td>
<td>There were two population groups used for this research. Both came from universities in the United States and Germany. The first sample included 262</td>
<td>The authors used policy-capturing in a simulation to examine how the students made decisions in different situations. The different scenarios looked at different variants of leadership (shared</td>
<td>• Shared leadership</td>
<td>Communication mode</td>
<td>Team performance</td>
<td>Genetic job satisfaction</td>
</tr>
<tr>
<td></td>
<td>The authors used policy-capturing in a simulation to examine how the students made decisions in different situations. The different scenarios looked at different variants of leadership (shared</td>
<td>• Degree of commonality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The authors used policy-capturing in a simulation to examine how the students made decisions in different situations. The different scenarios looked at different variants of leadership (shared</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>competencies and to unite a team on a personal level.</td>
<td>students and the second 99 employees.</td>
<td>vs hierarchical), communication modes (virtual vs face to face) and commonality of personality (low vs high).</td>
<td>• Shared leadership</td>
<td>• Group trust</td>
<td>• Group performance</td>
<td>• Findings also showed that teams with high and low commonality benefit from shared leadership (compared to hierarchical leadership)</td>
</tr>
<tr>
<td>Authors: Drescher et al. (2014)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The authors defined shared leadership as an emergent property of a group where leadership functions were distributed among group members.</td>
<td>A total of 84 teams comprising 849 individuals participated in a simulation game. The game involved a highly engaging, complex, and interdependent task which ran for approximately 12 months.</td>
<td>Researchers measured shared leadership as the total number of responsibilities granted within the group using trace data.</td>
<td>• Shared leadership</td>
<td>• Group trust</td>
<td>• Group performance</td>
<td></td>
</tr>
<tr>
<td>Authors: Ensley, Hmieleski &amp; Pearce (2006)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared leadership was described as a simultaneous, ongoing, mutual influence process within a team that is characterized by “serial emergence” of official as well as unofficial leaders.</td>
<td>Information was selected from 2 new venture top management teams. The first sample was drawn from the annual Inc. 200 list of America’s fastest growing start-up companies. A group of 168 managers from 66 firms with top management team (TMT) membership ranging from 2 to 6 people participated in the research. The second sample was selected from a database of young firms founded in the</td>
<td>The authors used Cox (1994), Cox and Sims (1996) leader behaviour questionnaire. Ratings were sought for directive, transactional, transformational and empowering leadership behaviours. A double response format was used to allow participants to rate the same questions about the vertical leader/s and to team members.</td>
<td>Control Variables: • Age of the firm, • Revenue and • Team size.</td>
<td>Vertical Leadership- measured using the leader behaviour questionnaire. Shared Leadership- was measured using the leader behaviour questionnaire.</td>
<td>New venture growth: • Revenue Growth • Employee growth</td>
<td>• An analysis of the results indicated that increased shared leadership was significantly related to positive changes in group trusting behaviour. • Results also showed that a positive change in shared leadership was associated with a positive change in group performance.</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Authors: Erkutlu (2012)</td>
<td>United States. A total of 657 responses were returned from 231 firms.</td>
<td>The author defined shared leadership as an emergent team property that results from the distribution of leadership influence across multiple team members.</td>
<td>The author collected information from 105 teams. These teams had been working in different departments within 21 commercial banks in Turkey.</td>
<td>The authors used a questionnaire developed by Hiller (2002) to assess shared leadership.</td>
<td>• Shared leadership</td>
<td>• Bureaucratic organisational culture • Innovative organisational culture moderates • Supportive organisational culture</td>
</tr>
<tr>
<td>Authors: Fausing et al. (2013)</td>
<td>This research focused on analysing responses from 552 team members constituting 81 teams from a Danish manufacturing company.</td>
<td>The authors described shared leadership as an emergent process, where leadership rotates to the individuals with the most relevant skills and expertise in each situation.</td>
<td>The authors used relevant sub-scales from the short version of the shared and vertical leadership questionnaire originally developed by Pearce and Sims (2002). The sub scales encompassed transformational, transactional and directive leadership, along with individual empowering, team empowering and aversive leadership.</td>
<td>• Shared leadership</td>
<td>• Team work function • Team autonomy</td>
<td>• Team performance</td>
</tr>
<tr>
<td>Authors: Fausing et al. (2015)</td>
<td>This study was conducted among 81 teams in a green tech manufacturing company located in Denmark. In total, 37 of the</td>
<td>The authors described shared leadership as a collective and reciprocal activity distributed among the members of a team.</td>
<td>Shared leadership was measured using Hoch et al.’s (2010)</td>
<td>• Empowering leadership-individual and team</td>
<td>Shared leadership processes: • Transformational • Transactional</td>
<td>• Team performance</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>--------------------------------</td>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Short Version of the Shared and Vertical Leadership Questionnaire.</td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Directive</td>
<td>related to team leader ratings of team performance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Empowering</td>
<td>• Aversive</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Psychological empowerment</td>
<td>• Fair reward</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Vertical leadership</td>
<td>• Leader prototypicality</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Shared Leadership</td>
<td>• Results indicated that the influence of vertical leadership on shared leadership might not be mediated by team member attitudes and perceptions of the formal team leader.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Shared Leadership</td>
<td>• Results indicated that the influence of vertical leadership on shared leadership might not be mediated by team member attitudes and perceptions of the formal team leader.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Interdependence around tasks and goals of the team</td>
<td>• Two performance measurements (project completion and customer satisfaction)</td>
<td>• Results indicated that the influence of vertical leadership on shared leadership might not be mediated by team member attitudes and perceptions of the formal team leader.</td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Grille, Schulte & Kauffeld (2015)

Shared leadership was defined as a group process in which leadership is shared among and stems from team members.

The study focused on eight six sigma teams working in hospitals.

The authors measured shared leadership by the number of interactions, dependencies, degree of centrality between team members (one-way or two-way interactions), and the perceived influence that members exert on each other.

The authors concluded that there was no association (relationship) between the customer satisfaction or project completion and shared leadership variables in time 1 and 3.

But they also found that there was a statistically significant difference between customer satisfaction, project completion
### Authors: Gu et al. (2016)

The authors defined shared leadership as a team property where leadership behaviours are displayed by multiple team members. The research focused on 53 inter-organisational teams, which formed organisations in the industries of information technology, manufacturing, finance and banking, pharmaceutical, and research institutions. Shared leadership was tested with 10 items adapted from Wood and Fields (2007). These items primarily investigated the degree to which team members of an inter-organisational team played a role in the decision process.

- **Antecedents**: Shared leadership
- **Mediators**: Knowledge sharing, Task interdependence
- **Outcomes/Emergent States**: Team creativity, Individual creativity

**Findings**: Findings showed that shared leadership was positively related to team creativity and individual creativity directly. The relationships between shared leadership, team creativity, and individual creativity was partially mediated by knowledge sharing in inter-organisational teams.

**Results**: Results indicated that task interdependence amplified the linkage between shared leadership and knowledge sharing, and the linkage between knowledge sharing and team creativity.

### Authors: Gupta, Huang & Yayla (2011)

This study examined collective transformational leadership (CTL). This was defined as the team’s capability for collectively engaging in transformational leadership behaviours (Avolio et al., 2009). Data were collected from 146 senior business students (divided into 36 teams) at a large metropolitan university in the Midwestern United States.

CTL was assessed by combining four interrelated leadership factors: intellectual stimulation, individualized consideration, inspirational motivation and idealized influence. These were measured using thirteen items in week 6 of the simulation.

- **Antecedents**: Social capital
- **Mediators**: Collective transformational leadership
- **Outcomes/Emergent States**: Team performance

**Findings**: The results demonstrated that the impact of team social capital on performance depended on the level of collective leadership enacted by the team. Social capital positively influences performance only when CTL is high. Results from this study also demonstrated that transformational leadership of the team may have no direct impact on overall performance.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Hiller, Day & Vance (2006) | Shared or collective leadership was distinguished as team members leading the team by sharing in leadership responsibilities. It was involving the relational process of an entire team with leadership being embedded in the dynamics of the social system. | Winter road teams of a state department of transportation. | 25 item instrument assessing perceptions of team-level collective leadership in the areas of:  
  - Planning and organising.  
  - Problem solving.  
  - Support and consideration.  
  - Development and mentoring. | • Collectivism  
• Power distance  
• Team size | • Collective Leadership: Frequency that team members shared in-  
Planning and organisation  
Problem Solving  
Support and Consideration  
Development and Mentoring | • Supervisory effectiveness dimensions:  
Planning and organisation  
Problem Solving  
Support and Consideration  
Development and Mentoring | • Collective leadership was positively related to several supervisory effectiveness dimensions.  
Collective leadership dimensions were related significantly and positively to collectivism.  
The relationship between collective leadership dimensions and power distance were not significant.  
Sharing in the relationship-oriented behaviours was found to be more important for team effectiveness than the sharing of task behaviours.  
Team size was not significantly correlated with collective leadership dimensions. |

| Authors: Hmieleski, Cole & Baron (2012) | The authors examined shared authentic leadership. They defined this as an ongoing, mutual influence process among team members that developed their positive psychological capabilities and promoted a positive climate consistent with members’ values and beliefs. | The sample came from a national random survey in the US of venture top management teams. This study included 179 respondents from 42 different states and 97 different industries. | Shared authentic leadership was measured using ten items adapted from Avolio and Luthans (2006) | • Shared authentic leadership  
• Positive team affective tone | • Firm performance | • The results suggested that shared authentic leadership had a positive indirect relationship with firm performance.  
The influence of shared authentic leadership was transmitted through TMTs’ positive affective tone. |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| **Authors:** Hoch (2013) | The author referred to shared leadership as a situation where multiple team members engage in leadership. They saw it as being characterized by collaborative decision-making and shared responsibility for outcomes. It was also discussed as a mutual influence process where members lead each other toward the achievement of goals. | The sample for this research consisted of 184 team members distributed within 43 work teams. Those teams were involved in product development and training in two different organisations. Shared leadership and vertical transformational and empowering leadership were assessed using the short scales by Hoch et al. (2010). | • Vertical empowering leadership  
• Vertical transformational leadership | • Shared Leadership  
• Innovative Behaviour  
• Results demonstrated that shared leadership was a strong predictor of team innovative behaviour  
• Vertical transformational and vertical empowering leadership significantly predicted shared leadership  
• Shared leadership was found to play a key role in explaining the relationship between vertical transformational and vertical empowering leadership or team member integrity, and team innovative behaviour. |
| **Authors:** Hoch (2014) | The author described shared leadership as leadership that was spread across team members and organisational units. The samples for this research came from two different organisations. One a training and development organisation and the other a service business. In total, there were 280 team members from 48 different teams. Shared leadership was measured using a short version of Pearce and Sims (2002) instrument developed by Hoch et al. (2010). This measured, transformational, transactional, empowering and aversive leadership behaviours. | Shared leadership  
• Team tenure diversity  
• Organisational tenure diversity  
• Age diversity  
• Information sharing | • Team performance  
• The authors found that shared leadership was more likely to correlate with team performance when there was high team diversity rather than conditions of low team diversity.  
• The results also indicated that information sharing was enhanced when shared leadership was high. |
| **Authors:** Hoch & Kozlowski (2014) | The authors defined shared team leadership as a mutual influence process, characterized by collaborative decision-making and shared responsibility, whereby team members lead each other toward the achievement of goals. This study focused on 101 research and development (R & D) teams from global manufacturing industries. In total, there were 565 team members and team leaders. Shared leadership was measured in terms of cognitive, affective, and behavioural dimensions. Cognitive items measured four elements relating to team learning: affective variables were | Shared leadership  
• Team virtuality  
• Team performance | • Team performance  
• An analysis indicated that team virtuality did not interact with shared leadership in predicting team performance: whereas shared team leadership was still positively related to team performance. |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>measured with five items on perceived team support and behavioural dimensions examined member-to-member exchange.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors: Hoch, Pearce and Welzel (2010)</td>
<td></td>
<td>The authors focused on Carson’s (2007) definition of shared leadership. They stated that it was an emergent team property that resulted from the distribution of leadership influence across multiple team members. In addition, it represented a condition of mutual influence embedded in the interactions among team members.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The authors researched shared leadership behaviours within 26 project teams, comprised of 96 individuals plus their respective team leaders from a German consulting company.</td>
<td></td>
<td>Shared leadership processes that promote teams toward a state of flow by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared leadership was assessed with the use of a questionnaire developed by Hoch et al. (2010). This measured, transformational, transactional, empowering and aversive leadership behaviours.</td>
<td></td>
<td>• Competitive external environments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Age diversity</td>
<td></td>
<td>• Team performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Shared leadership</td>
<td></td>
<td></td>
<td></td>
<td>Further analyses showed that both structural supports and shared team leadership predicted team performance, whereas hierarchical leadership did not.</td>
</tr>
</tbody>
</table>

Authors: Hooker & Csikszentmihalyi (2003)

Shared leadership was described as a process of shared influence between and among individuals that can emerge in a group context.

The primary source of the qualitative data was in-depth semi structured interviews. These discussions were recorded and a coding was used to analyses leadership processes with the team.

• Competitive external environments
• Specific group characteristic (i.e. levels of commitment, cohesion, group size and maturity)
• Shared leadership processes that promote teams toward a state of flow by:
  • reducing the salience of extrinsic rewards
• Team members experience flow in workplace environments:
  • that value excellence, freedom and control
  • in which members have clear goals
• The characteristics of the laboratory team fulfilled the prerequisites for shared leadership (i.e. relatively small group, interconnected tasks, demand for creativity and urgency).
• The head of the laboratory provided a comfortable, collegial,
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
|                           |              |                               |             | • Certain task characteristic (i.e. urgency and interconnectivity). |             | Meat
|                           |              |                               |             | • Internal systems (i.e. reward and support). |             | Antecedents
|                           |              |                               |             | • removing the worry of failure or being critically supervised |             | Mediators
|                           |              |                               |             | • creating autonomy and control |             | Processes and Emergent States
|                           |              |                               |             | • removing distractions |             | and Moderators
|                           |              |                               |             | • facilitating learning and high engagement |             | Outcomes
|                           |              |                               |             | • where people receive constant and timely feedback on performance |             | Emergent States
|                           |              |                               |             | • that effectively match challenges and skills |             | trusting and challenging environment that encouraged interactive forms of mutual influence.
|                           |              |                               |             | • where there are limited distractions |             | • Team members felt an uncommon sense of ownership over the outcomes of the group work and were highly engaged and intrinsically motivated.
|                           |              |                               |             | • Team members felt an uncommon sense of ownership over the outcomes of the group work and were highly engaged and intrinsically motivated. |             | Consequently, there were high levels of learning, proximal development, growth and flow. |

**Authors:** Huang (2013)

The author described shared leadership as collective leadership by team members, who undertake collaborative decision-making and shared responsibility for outcomes.

The sample for this research included 35 work teams made up from a total of 258 respondents working in small to medium sized enterprises in Taiwan.

The author used a shared leadership instrument extracted from Wood & Fields (2007).

|                           |              |                               |             | • Shared leadership |             |                     |
|                           |              |                               |             | • Knowledge sharing |             |                     |
|                           |              |                               |             | • Team size |             |                     |
|                           |              |                               |             | • Team heterogeneity |             |                     |
|                           |              |                               |             | • Team learning |             |                     |
|                           |              |                               |             | • Team learning |             |                     |
|                           |              |                               |             | • Results indicated that shared leadership had a significantly positive relationship with knowledge sharing. |             |                     |
|                           |              |                               |             | • The relationship between shared leadership and team learning was found to be positive. |             |                     |
|                           |              |                               |             | • The effect of shared leadership on team learning was enhanced when the size of the team was large. |             |                     |

**Authors:** Ishikawa (2012)

In this study, the author defined shared leadership as an emergent team property resulting from the distribution of leadership influence across multiple team members.

The study focused on 119 research and development (R&D) teams from manufacturing industries in Japan.

The author measured shared leadership by calculating the density of team members ratings of their peers as leaders. Leadership was measured using Bass’s Multifactor Leadership Questionnaire (Bass & Avolio 2004).

<p>|                           |              |                               |             | • Individual Transformational leadership |             |                     |
|                           |              |                               |             | • Individual Gatekeeper leadership |             |                     |
|                           |              |                               |             | • Shared leadership |             |                     |
|                           |              |                               |             | • Team performance |             |                     |
|                           |              |                               |             | • Transformational leadership had no significant correlation with shared leadership. |             |                     |
|                           |              |                               |             | • Gatekeeping leadership was positively related to both shared leadership and team performance. |             |                     |
|                           |              |                               |             | • Shared leadership was positively correlated with R&amp;D team performance. |             |                     |</p>
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Khasawneh (2011)</td>
<td>Faculty teams in three public universities in Jordan.</td>
<td>The Shared Leadership Questionnaire used 20 items to examine three constructs (participative decision making, communication and power). Team members were asked to use these items to assess the leadership behaviour displayed by faculty teams.</td>
<td>• Not discussed</td>
<td>• Shared leadership behaviours (communication, power and participative decision making)</td>
<td>• Organisational Citizenship Behaviour (OCB).</td>
<td>• Shared leadership is perceived to be moderately practiced in Jordanian public universities. • The leadership dimension with the highest score was communication, followed by power and decision making. • Results indicated that shared leadership explained 36.4 per cent of the variance in OCB. This reflected a positive, high and significant effect on OCB.</td>
</tr>
<tr>
<td>Authors: Klein et al. (2006)</td>
<td>A team of medical specialists working in a trauma resuscitation unit (TRU) in a city trauma hospital in the Mid-Atlantic region of the United States.</td>
<td>The level of analysis is the TRU team with researchers attempting to identify the commonalities that describe team processes. Team dynamics were measured in two phases. In phase one the authors conducted semi structured interviews with team members and spent over 150 hours observing the treatment of patients. During phase two data was collected through targeted interviews with an additional 23 TRU members.</td>
<td>Contextual factors such as the structure of the team, the level of commitment to developing novice members and the focus on high quality outcomes were all highlighted by the authors. Other contingencies included individual differences within the team, confidence in others and each individual team member’s confidence in their abilities.</td>
<td>The urgency- severity, novelty and “minute to minute changes” of the task, the recurring changes in the composition of the teams and the level of skills and proficiency of team members.</td>
<td>Shared leadership in the form of dynamic delegation—a rapid and repeated transfer of the active leadership role up and down the leadership hierarchy.</td>
<td>• Shared leadership was characterised as dynamic delegation in which team leaders stepped forward or backwards in response to the patients changing conditions and to the actions, competence and confidence of others in the leadership hierarchy. • This dynamic delegation emerged in hierarchically structured settings in which both reliable performance and the development of novice skills were priorities. • Dynamic delegation of the active leadership role fostered learning and reliability.</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/ Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| **Authors:** Konu & Viitanen (2008) | Researchers emphasised that shared leadership existed more in (human) relations than in a single individual; it was based on responsibility and leadership practice that established an expectation that all members of the work community participate in its performance. | A total of 433 middle-level managers responded. All worked in social services and health care in municipalities and municipal federations in Finland. This study was part of a larger Finnish research project. The authors having reviewed the literature, selected items they thought best described shared leadership practices. Using single variables for shared leadership, a sum variable with 28 questions was formed. | • Gender  
  • Age | • Activity Sector  
  o Specialized  
  o Health Centre  
  o Social Service Administration  
  • Managers professional background  
  o Doctor  
  o Nurse  
  o Social Care | • Shared leadership practices | Gender was distinctly related to the occurrence of shared leadership practices.  
Most practices indicative of shared leadership were found among female managers in larger units, either in health centres or in social service administration. Their professional background is most often in the nursing or social service field.  
Shared leadership practices were more common among managers other than those with medical background. |
| **Authors:** Kunzle et al. (2010) | The authors defined shared leadership as a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals. Researchers videotaped 12 anaesthesia teams in an operation theatre. The teams consisted of one resident and one nurse. Teams took part in a simulated anaesthesia induction. The task included a non-routine event (asystole). The authors analysed 13 video recordings of anaesthesia teams. They used a leadership taxonomy to code leadership behaviours. A high degree of shared leadership meant team members demonstrated similar amounts of leadership (mean rates per minute); a low degree meant one team member showed significantly more leadership than the other. | • Shared leadership functions; content-oriented leadership and structuring leadership | • Task load (high vs low) | Team performance | Results demonstrated that in high-performing teams, nurses and residents were evenly engaged in leadership during low- and high-task-load situations |
| **Authors:** Liu et al. (2014) | The authors defined shared leadership as an emergent leadership style resulting from the Research focused on data collected from 263 respondents who worked in. The authors measured shared leadership by using density, which | • Shared Leadership  
  • Team psychological safety  
  • Job variety | • Individual learning  
  • Team learning | • Findings highlighted that shared leadership was positively related | |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Distribution of leadership influence across multiple team members | 50 teams embedded in four large high-technology companies in China. These participants were working in teams with different functions, such as research and development, sales, human resources, and marketing. | Measured the total sum of leadership behaviours displayed by all team members rated by their peers in a team. They assessed leadership by asking "to what degree does your team rely on this individual for leadership?". | | | | to both team learning and individual learning  
- Shared leadership was found to be positively associated with team psychological safety  
- Team psychological safety partially mediated the relationships between shared leadership and both team learning and individual learning. |

**Authors:** Manz et al. (2010)

**Shared leadership** is described as an expression of the ability of hierarchical leaders to permit others to share ownership of problems and take possession of a situation.

This case study of Herman Miller Inc., a leading business and furniture innovator and manufacturer, examined shared leadership at an organisational level. Shared leadership was driven by a view that ideas needed to come from anyone and everyone at all levels within the company.

Shared leadership was examined through analysing examples of numbers of critical incidents and major challenges faced by the company. Data was collected from transcripts, published historical accounts, direct observations and interviews.

- **Shared leadership approach**  
  An emphasis on people both inside and outside the organisation being recognised as valuable resources. The importance of a perpetual creative process which emphasizes the primacy of ideas and expertise over hierarchical authority.

Sustained performance at Herman Miller Inc.

There was preliminary support for the author’s ethnographic inductive model. Their study of Herman Miller Inc. indicated that critical values in an organisations culture can play a central role in the successful practice of shared leadership. A culture that is grounded in the recognition of the potential valuable contributions that can come from all employees and which in turn strengthens the effect of the shared leadership process on long-term organisational success. Shared leadership in the form of “roving leadership” was flexible and free flowing.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Manz, Shipper & Stewart (2009) | This case study examined the leadership dynamics within various business units within W.L. Gore & Associates. | The authors examined shared leadership through the lens of what the company referred to as “natural leadership”. This meant that associates stepped forward to lead when they had expertise so that shared leadership was knowledge-based decision making. | • Organisational structures  
• Development programs  
• Organisations culture and values | • Relationship building  
• Advanced forms of teamwork and shared leadership | • Shared leadership was an integral part of the success of the organisation which operated without managers and relied upon the emergence of new product teams. Shared leadership was fostered by the culture and values inherent in the organisation and the structures that supported it. |
| Authors: Mathieu et al. (2015) | The sample included 205 students in 57 teams enrolled in eight sections of undergraduate and graduate level strategy courses at a large north east university in the United States. | The authors measured shared leadership using a social network approach and collected data by asking team members to rate their peers on the following “To what degree does your team rely on this individual for leadership”. | • Shared leadership  
• Team cohesion | | The authors found that shared leadership related positively to team cohesion but not directly to their performance. |
| Authors: McIntyre & Foti (2013) | Participants in this research comprised of 40 undergraduate computer science teams from universities throughout the northeast United States. These teams were participating in a regional computing competition. | A social network analysis was used with participants asked to check those team members they perceived as a leader. | • Shared leadership  
• Distributed fragmented  
• Distributed coordinated | • Team mental models  
• Task performance | • Teams with distributed-coordinated leadership had more accurate and a greater overlap in teamwork mental models than teams with distributed-fragmented leadership  
• Teams with distributed-coordinated leadership exhibited higher levels of performance than teams with distributed-fragmented leadership. |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Mehra et al. (2006) | Field-based sales teams in a large financial services team | Visual analysis of the topological structure of leadership networks. | • Length of time the formal leader had been in charge  
• Average tenure of the members of the group  
• Gender composition  
• Gender of the group leader  
• Characteristics of the Sales Territory | • Leadership processes:  
• Leader-centred  
• Distributed-fragmented  
• Distributed-coordinated | • Team Performance  
• Team Sales  
• Team Satisfaction | • Distributed leadership networks are not necessarily associated with higher team performance. But teams with distributed-coordinated leadership structures achieved significantly higher sales than teams that had traditional leader-centred structures or teams that had distributed fragmented structures. |
| Authors: Mendez & Busenbark (2015) | Data were collected from a sample of 231 participants in 28 committees. The committees were found in a variety of different industries including higher education, health, arts and culture and local administration. All respondents came from areas in the southwest of the USA | Shared leadership was measured using two social network properties, centralization and density. Leadership was evaluated using an instrument developed by the authors and based upon House’s (1996) definitions of directive and supportive leader behaviours. | • Gender | • Shared leadership | • Reduced gender bias or gap in leadership influence | • The results of this study suggested that shared leadership had no significant moderating effect on the relationship between gender and leadership influence.  
• Findings suggested that in committees, men were perceived to exhibit significantly higher leadership influence than women. This gap was just as important when leadership was shared as it was when leadership was focussed on few committee members or a single individual. |
| Authors: Mihalache et al. (2014) | Results comprised 202 surveys, from members of top management teams (TMT) working in a broad | To assess TMT shared leadership, the authors developed an eight-item scale based on Manz and Sims’ | • Shared leadership | • Cooperative conflict management style  
• Decision making comprehensiveness  
• Organisational ambidexterity | • Organisational ambidexterity | • The authors found that TMT shared leadership enabled organisational ambidexterity by promoting a TMT cooperative conflict management style and by |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>participate in the task of leadership (Ensley, Pearson, and Pearce, 2003).</td>
<td>range of industries in Holland.</td>
<td>(1987) widely used scale of self-managing work teams.</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Enhancing TMT comprehensive decision making.</td>
<td></td>
</tr>
</tbody>
</table>

**Authors: Neubert (1999)**

The author examined the distribution of informal leaders within teams. These informal leaders were not necessarily identified with a formal position but were instead seen by peers as fulfilling leadership functions. The author accessed 21 teams consisting of 252 participants from Midwestern manufacturing organisations in the United States. Shared leadership was measured as the ratio of the number of team members nominated as informal leaders per team divided by the size of the team. Each team member was asked "Has a leader emerged within the team (someone who is both a team member and a leader)?"

- Informal leadership dispersion
- Gender

**Findings**

- The results of this research indicated that more informal leadership dispersion (a larger proportion of informal leaders per team) was positively but not significantly, related to team performance.
- Findings also suggested that the more informal leadership dispersion was significantly related to team cohesion.
- Having more females as informal leaders within the team was also significantly related to team performance positively, but not significantly, related to team cohesion.

**Authors: Nicolaides et al. (2014)**

The authors referenced the definition developed by Pearce and Conger (2003). They saw shared leadership as a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals or both. The authors adopted a meta-analysis to research a total of 467 studies. Of those studies 52 complied with the adopted selection criteria. This included a total sample size of 3882 teams. The authors relied heavily on the leadership functions framework laid out by Morgeson et al. (2010) to select studies for the meta-analysis. To be selected, a study’s items needed to describe specific behaviours that the team or everyone performed that satisfied team needs as described by Morgeson et al. (2010).

- Team confidence
- Task interdependence
- Team performance index (subjective vs objective indices)
- Team size
- Team tenure
- Team type
- Type of measurement used to evaluate shared leadership

**Findings**

- Findings provided support for the view that shared leadership had important effects on performance, over and above the effects of vertical leadership.
- Shared leadership contributed to performance through the enactment of a motivational emergent state: team confidence.
- Results showed that shared leadership was particularly effective when interdependence in teams was high.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/ Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Novikov (2016)   | Integrated Product Teams (IPT) | The authors used a semi-structured focus group interview using questions adapted from Woods and Fields (2007) study. | • Cooperative and collaborative team culture  
• Team member self-leadership | • Shared Leadership  
• Enhanced processes  
• Cognitive  
• Affective  
• Motivational  
• Shared Decision Making | • The team appeared to display a shared purpose.  
• The team also seemed to provide social support to its members.  
• There was evidence of self-leadership amongst members  
• The results of shared leadership within the IPT included positive cognitive, affective and motivational team processes.  
• Through shared leadership the IPT employed a collaborative inclusive decision-making style that encouraged the sharing of member ideas and perspectives |
| Authors: Park & Zhu (2017) | Research focused on thirty self-managed teams working in South Korea. | The authors used qualitative methodology and garnered information from “Semi-structured in-depth interviews”. | • Team awareness  
• Team esteem  
• Collective efficacy  
• Team trust  
• Open communication | • Shared leadership as demonstrated by:  
• Autonomously deciding; taking proactive initiatives; engaging in extra-role behaviours, horizontally making joint decisions and collectively making a joint decision.  
• Learning and growth  
• Innovative outcomes  
• Performance  
• Job Engagement  
• Sense of accomplishment  
• Potential inefficiency | • The authors found evidence for the antecedents, shared leadership functions and the outcomes listed. |
| Authors: Pearce & Ensley (2004) | Research was conducted at a large automotive firm located in the mid-Atlantic United States. The authors used a sample of 71 product, | Shared vision was assessed with a scale that examined how well team members shared in the development, creation, communication, and | • Age of team members, tenure, heterogeneity (sexual, functional, educational), team | • Shared Vision  
• Product and process innovation team dynamics as measured by; | • The authors found that shared vision was positively influenced by previous levels of innovation in the team |

**Table Note:**
- The table above provides a structured overview of different studies on shared leadership, including the type of team, measure of shared leadership, antecedents, mediators, and outcomes. Each study is referenced with authors and specific details about their methodology and findings.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>team process where team members shape and create vision.</td>
<td>process and innovation teams.</td>
<td>reinforcement of a common vision for the goals and desired future state of the team. This scale was based on a modified version of the vision scale used by Scully et al. (1994)</td>
<td>size and time since formation of the team.</td>
<td>Potency, Altruism, Teamwork, Courtesy and Social loafing</td>
<td>• They also concluded that shared vision appeared to take a central role in the innovation process and was one of the key components of team creativity. • Shared vision was also a strong predictor of team altruistic behaviour and courtesy behaviours.</td>
<td></td>
</tr>
<tr>
<td><strong>Authors:</strong> Pearce &amp; Sims (2002)</td>
<td><strong>Authors:</strong> Pearce, Yoo &amp; Alavi (2004)</td>
<td><strong>Pearce &amp; Sims (2002)</strong> Shared Leadership is a group process in which leadership is distributed among, and stems from, team members. The study examined 71 change management teams in a large automotive manufacturing firm. The authors used Cox (1994), Cox and Sims (1996), Pearce et al. (2001) leader behaviour questionnaire. Ratings were sought for directive, transactional, transformational and empowering leadership behaviours. A double response format was used so that individuals responded to each item twice, once in relation to the team leader and once for their team members.</td>
<td>• Team Size</td>
<td>Vertical leadership measured using the leader behaviour questionnaire. Shared Leadership measured using the leader behaviour questionnaire.</td>
<td>Team Effectiveness as measured by managers, internal customers and team self-ratings for: • Output • Quality • Change • Organisation and Planning • Interpersonal • Value • Overall</td>
<td>• Shared leadership was found to be an important predictor of team effectiveness. Shared transformational and shared empowering leadership were both positively related to all three ratings of team effectiveness. • Overall the results demonstrated that shared leadership was a more useful predictor of team effectiveness than vertical leadership. High performing teams exhibited slightly more shared leadership than vertical leadership. In contrast low performing teams exhibited more vertical leadership than shared leadership.</td>
</tr>
<tr>
<td>Simultaneous, ongoing, mutual influence process within a team that is characterised by “serial emergence” of official as well as unofficial leaders.</td>
<td>A total of 206 social workers participating in an educational program formed virtual teams which undertook a 10-week action learning project. The project involved the development of Four subscales were developed based on Cox and Sims (1996) leader behaviour questionnaire: ratings were sought for directive, transactional, transformational and empowering leadership</td>
<td>• Team Size</td>
<td>Vertical leadership behaviours (Empowering, Directing, Transactional and Transformational)</td>
<td>• Potency • Social Integration • Problem Solving Quality</td>
<td>No vertical leader behaviours were significantly related to any of the outcome measures. • Shared leadership was found to be a more important predictor than vertical leadership of potency, social integration,</td>
<td></td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>---------------------------------------------------------</td>
<td>-------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>a community revitalization plan.</td>
<td>behaviours. Participants were asked to rate the leadership behaviours of both the team leader (vertical) and their team members (shared).</td>
<td>(Empowering, Directive, Transactional and Transformational).</td>
<td>● Perceived Effectiveness</td>
<td>● Problem solving quality and perceived effectiveness. ● Shared leadership behaviours were significantly related to many of the outcome measures. For example, shared transformational and empowering leadership were both positively related to potency and social integration.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Ramthun (2013)

The author referenced Pearce and Conger’s (2003) definition of shared leadership as a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals or both.

This study, examined the influence of shared leadership on team performance for 51 military combat teams in a simulated dangerous environment. Shared leadership was evaluated by team members answering, “to what degree did you rely on this individual for leadership?”.

The study measured shared leadership using a social network analysis and examined both density of exchanges and the perceived distribution of leadership throughout the team.

- ● Shared leadership
- ● Team combat experience
- ● Dangerous combat environments
- ● Team performance

**Findings**

Results showed that shared leadership (density) positively and significantly related to team performance.

- ● Results also highlighted that shared leadership (centralization) was not significantly related to team performance.

**Authors:** Robert & You (2013)

Shared leadership was defined as a relational and collaborative leadership process or phenomenon involving teams or groups that mutually influence one another and collectively share duties and responsibilities.

A total of 93 students enrolled at a large public university in the United States formed 27 virtual teams to complete a distance education program. Team shared leadership was based on the density of shared leadership. Team members were asked to rate to what degree each team member displayed shared leadership.

- ● Team size
- ● Team tenure
- ● Racial diversity
- ● Shared leadership
- ● Individual trust

**Findings**

Results indicated that shared leadership increased levels of individual satisfaction.

- ● The findings also demonstrated that individual trust had a significant and positive impact on increasing levels of individual satisfaction.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Roppo &amp; Sauer (2003)</td>
<td>The authors explored the engagement between the business community and the Finnish symphony orchestra in developing partnerships.</td>
<td>The authors outlined a case study which explored the kinds of leadership required to develop those business relationships</td>
<td>• Shared leadership and shared vision.</td>
<td>• There was no emphasis on any mediators or moderators.</td>
<td>• The orchestra secured new funding sources and developed new cultural products for new audiences.</td>
<td>• The authors concluded that leadership actors and activities were widely dispersed in partnership situations. • The authors emphasised the importance of certain conditions to ensure successful partnerships, one of which was shared leadership</td>
</tr>
<tr>
<td>Authors: Serban &amp; Roberts (2016)</td>
<td>The sample was comprised of 120 undergraduate and master students from a public research university in the West Midlands region of England</td>
<td>The author measured shared leadership using the scale developed by Carson et al. (2007), by asking team members to indicate the degree to which the team relied on each of the four team members for leadership</td>
<td>• Internal team environment</td>
<td>• Team satisfaction</td>
<td>• Internal team environment is a predictor of shared leadership • Task cohesion was found to predict shared leadership • The author also found that relationships between shared leadership and satisfaction with both the team and the task were higher under a low task ambiguity condition.</td>
<td></td>
</tr>
<tr>
<td>Authors: Shamir &amp; Lapidot (2003)</td>
<td>This research focused on the actions and behaviours within teams of 15-20 Israel Defence Force cadets who were participating in a three to six-month officer training program.</td>
<td>Evidence of shared leadership used in this research was collected in the framework of a larger study of subordinate’s trust in their leaders. Critical incidents provided evidence of shared leadership. Information about these events was reported using evidence from interviews with cadets and commanders.</td>
<td>• Structural arrangements that facilitate participation in decision making. • Shared values and a collective identity. • Levels of trust • A balanced utilisation of power.</td>
<td>• Shared leadership within the teams about expulsion decisions.</td>
<td>• When commanders of the training teams shared the leadership role with the cadets and involved them in expulsion decisions, then high levels of mutual trust emerged along with collective norms and standards. Teams developed as “occupational communities”. • Alternatively, a failure by the commander to be transparent in relation to expulsion decisions not only resulted in an erosion of trust</td>
<td></td>
</tr>
</tbody>
</table>

Shared leadership was described as the dispersion of leadership and management functions between organisations and within organisations. The authors explored the engagement between the business community and the Finnish symphony orchestra in developing partnerships. The authors outlined a case study which explored the kinds of leadership required to develop those business relationships.

Authors: Roppo & Sauer (2003)

Shared leadership was defined as “a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals or both” (Pearce & Conger, 2003, p. 1).

Authors: Serban & Roberts (2016)

Shared leadership is viewed as a reciprocal influence process among multiple parties (i.e. a designated leader and team member) in a systems context.

Authors: Shamir & Lapidot (2003)
**Definition or Description** Type of Team Measure of Shared Leadership Antecedents Mediators (Processes and Emergent States) and Moderators Outcomes/Emergent States Findings

Authors: Sivasubramaniam et al. (2002)

Team leadership was defined as the collective influence of members in a team on each other. Within-team behaviours that enables individual members of the team to identify with and be motivated by the team.

A total of 155 undergraduate university students at a large public university in the North-eastern United States completed both phases of the study. Students formed 41 groups and interacted on a weekly basis to complete experiential exercises and case assignments.

Students were assessed over time 2 periods- Time 1 (the third week of semester 1) and Time 2 (10 weeks after the initial assessment date).

The authors used Team Multifactor Leadership Questionnaire (TMLQ form 5X) developed by Bass and Avolio (1994); aggregated at the team level.

Team leadership behaviours – Transformational, Management by exception and Laissez-faire

Group Potency: Measured using an 8-item scale (Guzzo et al. 1993)

Group Performance: • Final group grades

**Findings**

but also an open power struggle between the commander and the team.

Authors: Small & Rentsch (2010)

Shared Leadership was defined as an emergent process of mutual influence, in which team members share in performing the leadership functions of the team.

The study focused on 60 teams comprised of 4 to 5 business students, who were enrolled at a large public university in the United States.

Team members completed a semester long business simulation exercise. During the exercise participants undertook roles in top management teams charged

Leadership behaviour was measured using a 12-item leadership scale which used items from both the Team Multifactor Leadership Questionnaire (Avolio, et al. 2003) and the Leader Behaviour Description Questionnaire (Stogdill, 1963). The distribution or sharing of these leadership behaviours was measured by examining

Stages of team development.
Levels of team collectivism.
Levels of intragroup trust.
Control variables: team size, gender and race diversity.

Shared Leadership as measured by network centrality.

Team Performance- e.g. financial performance and market effectiveness.
Coach’s subjective rating of the team- e.g. decision quality, adaptability, organisational planning.

• Team transformational leadership was positively related to group potency in both time periods.
• Group potency in Time 2 significantly and positively predicted standardized group performance.
• Team transformational leadership had a significant and positive indirect effect on group performance.

• Shared Leadership was positively and significantly related to objective performance. The level of shared leadership was lower when teams initiated their tasks than in later stages of team development.
• Team collectivism was positively related to Shared Leadership at Time 1 but not at Time 2. The level of intragroup trust developed in Time 1 was positively related to shared leadership at Time 2. Overall the
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>with starting a new manufacturing company in the microcomputer industry.</td>
<td>network centralization using Social Network Analysis.</td>
<td>results indicated that collectivism and trust were antecedents of shared leadership (measured as network centralization) which is itself positively related to team performance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Solansky (2008)

Shared leadership was defined as a practice in which important decisions about what to do and how to do it were made using an interactive process that involved many different people who influence each other, not by a single person.

Undergraduate students in a management class at a large South-western University in the USA formed 20 work teams. Over a six-week period, these teams competed against one another in various activities like the creative design and construction of products and services.

The author utilised sociograms to analyse how team members nominated their role and the role of others. Shared leadership occurred when content analysis revealed that 50% of team members identified multiple individuals as their leaders.

Team size

Process:
- Shared Leadership: >50% of the team identified multiple individuals as leaders.
- Non-shared leadership group: only one leader identified

<table>
<thead>
<tr>
<th>Outcomes/ Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Collective Efficacy</td>
<td>Collective efficacy was higher for the shared leadership teams.</td>
</tr>
<tr>
<td>Low Relational Conflict</td>
<td>Those teams that displayed shared leadership did have higher levels of transactional memory.</td>
</tr>
<tr>
<td>High Transactive Memory</td>
<td>Teams that displayed shared leadership demonstrated less conflict than those that had no shared leadership. However, the difference in scores for relational conflict between teams was not statistically significant.</td>
</tr>
</tbody>
</table>

**Authors:** Somboonpakorn (2011)

The author described shared leadership as a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of the group or organisational goals or both.

This study was based on data obtained from 800 nurses, representing 223 teams working in 10 Thai hospitals.

The author used “The Leadership Profile” (TLP) to measure leadership behaviour. This instrument developed by Rosenbach & Taylor (2005) examined collective transactional and transformational behaviours.

<table>
<thead>
<tr>
<th>Shared leadership</th>
<th>Job stress</th>
<th>Team effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The result of this study revealed that shared leadership enhanced group cohesiveness and lead to an increase in team effectiveness.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition, the consequential increase in job demand under shared leadership setting did not appear to give rise to job stress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Authors: Steinheider &amp; Wuestewald (2008)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared Leadership was described as power divided among co-workers and a distribution of tasks and responsibilities up, down and across the hierarchy. It was also viewed as a social process with a focus on collective learning.</td>
<td>This case study examined the effects of a shared leadership initiative in a cross-sectional leadership team in a department of the US Police Force, northeastern Oklahoma.</td>
<td>Pre/post-test design, before (2002) and after (2005) the establishment of the cross-sectional leadership team. Survey data, semi-structured interviews and archival data were used to assess the potential outcomes of the shared leadership interventions.</td>
</tr>
<tr>
<td>Authors: Taggar, Hackett &amp; Saha (1999)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The authors did not define leadership from a shared perspective, but instead focused on the distribution of emergent team leadership with groups. Participants included 480 undergraduate students in a midsized university in the United States. These formed 94 working groups. Team leaders were not assigned to these groups.</td>
<td>Each team member assessed other team members by rating whether they had exemplified leadership.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Authors: Ullah &amp; Park (2013)</td>
<td>This analysis was based upon responses from 296 employees in nine insurance companies in South Korea.</td>
<td>The authors measured team members attitudes about shared leadership by using 13 items developed by Small (2007).</td>
</tr>
<tr>
<td>Authors: Wallace (2001)</td>
<td>Senior or School Management Teams (SMTs) operating in British Primary Schools. These teams typically consisted of the principal, the deputy principal and other teachers with the most substantial management responsibilities.</td>
<td>A combined cultural and political perspective was employed to investigate how the “culture of teamwork” as expressed in the four SMT’s embodied contradictory values and beliefs. The author undertook focused interpretative case studies of four SMTs using three different data sources. These comprised of 58 semi-structured interviews, non-participant observations of 22 meetings involving SMT members and an examination of document archives.</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------</td>
<td>-----------------------------</td>
</tr>
</tbody>
</table>
| Authors: Wang et al. (2017) | The teams comprised of 310 executive MBA students in 66 teams working on a business simulation project | Team members were asked the question: “To what degree does your team rely on this individual for leadership during team discussion and interaction?” (0 = not at all, 10 = to a very great extent). These responses were then converted into a density score to measure shared leadership. | • Not discussed | • Shared leadership | • Team learning | the hierarchical authority of the principal  
• No SMT synergy—the principal operates hierarchically and independently, members of the SMT do not accept the principal’s authority as it transgresses their existing beliefs about SMT processes. |

Authors: Wang, Waldman & Zhang (2014)

The authors conceptualized the content of shared leadership in three categories: (a) shared traditional leadership (i.e. transactional forms) (b) new-genre leadership (i.e. transformational forms) and (c) cumulative (i.e. based on individual overall rating of leadership influence).

The authors conducted a meta-analysis of 42 independent samples of shared leadership and examined its relationship to team effectiveness.

There were three criteria guiding the selection process for inclusion of studies. First, research reports needed to have offered enough to allow effect size computation. Second, research reports needed to provide team-level shared leadership scores. Third, the authors only

• Results showed a moderately strong association between shared leadership and team effectiveness.  
• Findings indicated that the relationship between shared traditional leadership and team effectiveness was weaker than that between shared new-genre leadership.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Authors: Weibler & Rohn-Endres (2010) | | | included studies with adult samples (employees or adult students) and excluded experimental studies | | leadership and team effectiveness. | • The authors found that shared leadership was more strongly related to attitudinal outcomes and behavioural processes and emergent states compared with subjective and objective outcomes.  
• Findings suggested a positive relationship between work complexity and the effect size of shared leadership with team effectiveness. |

The focus in this research was on shared leadership as leadership that individuals construct together in social interaction. This relational view implies among other things process ontology in which leadership activities and practices emerge in daily social interactions without predefined leadership roles or functions.

This study examined shared leadership in two inter-organisational networks located in Germany.

The authors used an exploratory and grounded theory investigation which examined generative dialogue within a network; forms of social interaction in which the whole team or group shares the responsibility of the process and improves their ability to cooperate.

Membership structure—homogeneity and stability.  
Size—number of participants

Learning Environment  
• Individual leadership influence e.g. organisation of network processes  
• Collective network activities  
• Network relationships

Network learning, network solidarity and network cohesion

The research findings emphasised the importance of context. The importance of both individual and collective leadership processes rather than a case of either-or. The emergence of shared network leadership was dependent upon:

• The specific support of individuals who care about designing network context and conditions for learning conversations  
• Collective processes were strongly limited to high quality relational micro processes and a mutually supportive learning environment.
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
</table>
  - Age  
  - Ethnicity  
  - Gender  
  - Educational attainment  
  - Team situation variables:  
    - Team size  
    - Job Role  
    - Job tenure  
    - Team tenure | • Team Behaviours:  
  - Directive  
  - Empowering  
  - Team structure | • Shared Leadership | • Empowering team behaviours were positively related with shared leadership.  
  • Horizontal team structures did not relate significantly with the occurrence of overall shared leadership.  
  • The author found that while the structure of a team might be designed to promote shared leadership, it was the behaviours experienced within the team that most influenced members to share leadership. |

| Authors: Wood & Fields (2007) | This study evaluated responses from 200 pastors who worked as members of top management teams within 72 independent Christian Churches and Churches of Christ in the United States. | A Shared Leadership in Work Teams Questionnaire was constructed using ten items derived from Porter-O'Grady and Wilson (1995) and Hiller's (2002) research instrument. The quantity of shared leadership was measured by participants as the degree to which the whole team engaged in leadership behaviour. | Shared Leadership | • Role Conflict  
  • Role Ambiguity  
  • Organisational Culture that is supportive of teamwork | • Job Stress  
  • Job Satisfaction | • Higher levels of shared leadership were associated with lower levels of role conflict, role ambiguity and job stress.  
  • Shared team leadership was positively related to job satisfaction of team members.  
  • The effects of shared leadership on job outcomes of team members was weaker in organisations that place more emphasis in their culture on teamwork compared to organisations which place less emphasis on teamwork.  
  • Team size was negatively correlated with role conflict. |
<table>
<thead>
<tr>
<th>Definition or Description</th>
<th>Type of Team</th>
<th>Measure of Shared Leadership</th>
<th>Antecedents</th>
<th>Mediators (Processes and Emergent States) and Moderators</th>
<th>Outcomes/Emergent States</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Wu &amp; Chen (2018)</td>
<td>The authors collected data from 267 employees in the food and beverage and marketing departments of 52 international tourist hotels in Taiwan.</td>
<td>Shared leadership was assessed using the scale developed by Carson et al. (2007).</td>
<td>• Shared Leadership</td>
<td>• Collective PsychCap</td>
<td>• Organisational Commitment • Creativity</td>
<td>Results demonstrated that shared leadership was positively and significantly correlated with collective PsychCap, organisational commitment, and creativity. In addition, collective PsychCap played an important partial mediating role in the relationships between shared leadership and organisational commitment, and between shared leadership and creativity.</td>
</tr>
<tr>
<td>Authors: Wu &amp; Cormican (2016)</td>
<td>This study comprised of data collected from two types of engineering design teams; chemical engineering and mechanical engineering design teams. In total there were 158 respondents from 22 teams who participated in our study,</td>
<td>Respondents were asked to select the names of individuals that they perceived performed leadership responsibilities. This data was then used to assess network density, centralization, efficiency and strength.</td>
<td>Shared leadership-network; • Density • Efficiency • Centralization • Strength</td>
<td>• Team size • Team experience</td>
<td>• Team creativity</td>
<td>The research findings showed positive relationship between network density in shared leadership structures and team creativity. There was a negative relationship between centralization of shared leadership and team creativity. Results did not support the relationship between efficiency in shared leadership networks and team creativity. Findings also suggested that there was an optimal strength in a shared leadership network which contributes to creativity.</td>
</tr>
<tr>
<td>Authors: Yang &amp; Shao (1996)</td>
<td>The authors focused on analysing two self-managing</td>
<td>Participants completed a competing values self-assessment survey questionnaire. This measured</td>
<td>• Team member’s education.</td>
<td>The distribution and balance of eight leadership roles between members of</td>
<td>• Successful self-managed teams</td>
<td>The perceptions of team members were very similar</td>
</tr>
<tr>
<td>Definition or Description</td>
<td>Type of Team</td>
<td>Measure of Shared Leadership</td>
<td>Antecedents</td>
<td>Mediators (Processes and Emergent States) and Moderators</td>
<td>Outcomes/Emergent States</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>apart, shared, rotated and used sequentially or concomitantly.</td>
<td>teams within a large food retailing firm. The first team comprised of 22 members who were responsible for handling groceries. The second team consisted of 27 members who oversaw the supply of meat and dairy products.</td>
<td>eight competencies and leadership roles (innovator, broker, producer, director, coordinator, monitor, facilitator, and mentor). Each of the individual role scores were then averaged with other members of the same team to get a team role score. The level of shared leadership was calculated by examining the distribution of the eight roles within the teams.</td>
<td>• The length of time the team had been together. • Structural characteristics of the team. • Task characteristics</td>
<td>the self-managed team who were working together within the groceries distribution centre.</td>
<td>regarding the distribution of the eight leadership roles. • This research indicated that team members were skilled in all the eight leadership roles and that the various roles of leadership existed simultaneously but did not necessarily receive equal emphasis.</td>
<td></td>
</tr>
</tbody>
</table>

**Authors:** Zhou (2012)

The sample consisted of 200 entrepreneurial teams in a technology incubator found in Hangzhou, Zhejiang province, China. The authors used the method developed by Carson et al. (2007) and asked each team member “To what degree does your team rely on this individual for leadership?”. The authors then calculated a density score for each team.

- Informational Diversity
- Personal Diversity
- Shared Leadership
- Entrepreneurial Team Performance
- The results indicated a positive and significant relationship between shared leadership and entrepreneurial team performance. At the same time, shared leadership was found to moderate the relationship between management skill diversity and entrepreneurial team performance.
Appendix E: Human Research Ethics Approval – The University of Western Australia

Our Ref. RA/4/1/6961

29 August 2014

Winthrop Professor John Cerdery
UWA Business School
MBDP: M859

Dear Professor, Cerdery

HUMAN RESEARCH ETHICS APPROVAL – THE UNIVERSITY OF WESTERN AUSTRALIA

How the Distribution of Influence Relationships in Teams Affects Collective Leadership Outcomes

Student(s): Richard Gourier – PhD - 18019612

Ethics approval for the above project has been granted in accordance with the requirements of the National Statement on Ethical Conduct in Human Research (National Statement) and the policies and procedures of The University of Western Australia. Please note that the period of ethics approval for this project is five (5) years from the date of this notification. However, ethics approval is conditional upon the submission of satisfactory progress reports by the designated renewal date. Therefore, initial approval has been granted from 26 August 2014 to 01 September 2019.

You are reminded of the following requirements:

1. The application and all supporting documentation form the basis of the ethics approval and you must not depart from the research protocol that has been approved.
2. The Human Ethics office must be approached for approval in advance for any requested amendments to the approved research protocol.
3. The Chief Investigator is required to report immediately to the Human Ethics office any adverse or unexpected event or any other event that may impact on the ethics approval for the project.
4. The Chief Investigator must submit a final report upon project completion, even if a research project is discontinued before the anticipated date of completion.

Any conditions of ethics approval that have been imposed are listed below.

Special Conditions

None specified

The University of Western Australia is bound by the National Statement to monitor the progress of all approved projects until completion to ensure continued compliance with ethical principles.

The Human Ethics office will forward a request for a Progress Report approximately 30 days before the due date.

If you have any queries please contact the Human Ethics office at humanethics@uwa.edu.au.

Please ensure that you quote the file reference – RA/4/1/6961 – and the associated project title in all future correspondence.

Yours sincerely

Dr Canvia Li
Manager, Human Ethics
Appendix F: Participant Information Form

Participant Information Form

Project Title: "How the distribution of influence relationships in teams affects collective leadership outcomes".

You are invited to participate in a study that looks into team effectiveness in schools. Teams are a key feature of how work is carried out in many schools, and include subject departments (e.g. Geography), a year group (e.g. Year 5 teachers), middle management and executive (e.g. Heads of Departments) or interdisciplinary and project teams (e.g. Middle School Curriculum Coordinators).

The purpose of this doctoral research is to examine how patterns of influence relationships and levels of interdependence within (department, middle management, year group, interdisciplinary, executive) teams affect their functioning, and contribute to their overall success.

This study is being undertaken by Richard Gooster
Phone: (mobile) 0412745306
Email: richardg@imale.wa.edu.au

and supervised by
W/Prof John Cordery
Phone: (office) 92 6488 2006
Email: john.cordery@uwa.edu.au

from the Business School, at the University of Western Australia, Perth, Australia.

If you agree to participate in this research you will be asked to complete an online questionnaire. This questionnaire should take no more than 20 minutes. We are specifically interested in exploring those relationships you and other team members have within your (department, middle management, year group, interdisciplinary, executive) work team at school.

Participation in this research is voluntary. If you do decide to take part and later change your mind, you are free to withdraw without prejudice in any way. You do not need to give any reason for withdrawing from the study. If you do decide to withdraw and not complete the questionnaire, then any information you have provided will not be included as part of this study unless you agree to that information being used.

Completion of the questionnaire will be considered evidence of your consent to take part in this research project.
Results from individual respondents will be coded so that the names and identity are removed. Responses will be combined so that we can study teams as a whole and compare patterns of influence relationships between teams. Consequently, the responses from all participants will remain completely confidential. Only aggregated data will be reported without identifying any individual team member, team or organization who has participated in this study.

Richard is responsible for the security of data. All information attributable to the questionnaire will be stored as digital data. This will be secured within password protected files on his personal computer and/or the UWA Institutional Research Data Store. Only he and his supervisor will have access to any data attributable to the questionnaire. Data will only be used for the purpose of Richard’s PhD thesis and associated work. In accordance with Western Australian University Sector Disposal Authority requirements, digital data attributable to the questionnaire will be retained for a period of 7 years following the completion of the project, before being destroyed using software which permanently erases data.

Thank you in anticipation for taking the time to participate in this study. Your contribution is vital to the success of the research and you should know that in completing the questionnaire you will be making a significant contribution to an improved understanding of team dynamics in schools. The data gathered from this research will enable school communities to better understand the impact of shared influence within teams and the connection these patterns have with team level outcomes. Results of this study will be included in a research thesis and may be published in a journal. A report outlining the aggregate data will be made available upon request.

If you have any concerns, queries or you would like some assistance then please do not hesitate to contact Richard Goater on 0412743596 or by email on richardg@hale.wa.edu.au

John Cordery

Approval to conduct this research has been provided by the University of Western Australia, in accordance with its ethics review and approval procedures. Any person considering participation in this research project, or agreeing to participate, may raise any questions or issues with the researchers at any time.

In addition, any person not satisfied with the response of researchers may raise ethics issues or concerns, and may make any complaints about this research project by contacting the Human Research Ethics Office at the University of Western Australia on (08) 6488 3703 or by emailing to hreo-research@uwa.edu.au

All research participants are entitled to retain a copy of any Participant Information Form and/or Participant Consent Form relating to this research project.
Appendix G: Invitation to Principals to Participate in Research Project

An invitation to participate in a unique research project focussed on team effectiveness in schools

As part of his doctoral studies at the University of Western Australia, Richard Goater, Director of Staff Development at Hale School is undertaking research into team effectiveness in schools.

The research is specifically focussed on understanding how the pattern of relationships in teams helps teachers gain more knowledge, have shared direction and maintain their vitality and commitment in the face of ever increasing demands.

The research tool is a questionnaire that has been piloted and tested for its reliability and validity under the supervision of Professor John Cordery from the University of Western Australia.

Richard is looking to access teams that are either formal or informal as long as they comprise at least three members. Examples include:

- The school executive
- Year groups
- Departments
- Cross curricula teams
- Project teams
- Action learning teams

Participating schools will be guaranteed anonymity in the published report which will be made available to the school.

We realise this is an additional request in an already overloaded work environment but can attest to the fact that for a small input it will provide valuable insights into building school capacity, beyond the classroom. The beneficiaries from contributing to this research will be students, colleagues and the schools.

Below is a link to a short video that provides more context to this request.

https://www.youtube.com/watch?v=HonWEBK6EZ8&feature=youtu.be

For further information, please contact Richard at the number below, or email him at rgo@hale.wa.edu.au.

Richard Goater
Director of Staff Development, Hale School
Ph: (08) 9347 0128 | Mobile: 0412745506
Appendix H: Education Department of Western Australia Permission to Approach Principals

Mr Richard Goater  
27 Robinson Terrace  
DAGLISH WA 6908

Dear Mr Goater  

Thank you for your application received 25 November 2015 to conduct research on Department of Education sites.

The focus and outcomes of your research project, *How the distribution of influence relationships in teams affects collective leadership outcomes*, are of interest to the Department. I give permission for you to approach principals to invite their participation in the project as outlined in your application and subsequent correspondence. It is a condition of approval that upon conclusion the results of this study are forwarded to the Department at the email address below.

Consistent with Department policy, participation in your research project will be the decision of the schools invited to participate and individual staff members. A copy of this letter must be provided to principals when requesting their participation in the research.

Responsibility for quality control of ethics and methodology of the proposed research resides with the institution supervising the research. The Department notes a copy of a letter confirming you have received ethical approval of your research protocol from the Human Ethics office at The University of Western Australia.

Any proposed changes to the research project will need to be submitted for Department approval prior to implementation.

Please contact Dr. Adrian Wolvaardt, Coordinator Research Applications, on (08) 9264 5512 or researchandpolicy@education.wa.edu.au if you have further enquires.

Very best wishes for the successful completion of your project.

Yours sincerely
Appendix I: Questionnaire

Default Question Block

Survey Description

This is a survey examining team success in schools. It will take you no more than 20 minutes to complete. I thank you in advance for taking the time to participate in this survey. Your responses are important, as they will enable us to better understand the topic and promote team effectiveness in schools. For more information of this research, please refer to the Participant Information, which is attached to this email.

Your involvement:
For meaningful results, it is important to focus upon the academic departments, year group, interdisciplinary, middle management, action learning, project or executive teams with whom you regularly work. It is preferable that these teams contain between 3 and 10 people. In a large Department like Mathematics or English, this might include smaller working groups, for example: teachers who work together to deliver the Year 7 Maths Curriculum or the Year 12 English syllabus.

Please bear in mind that this is not a test. There are no right or wrong answers, so it would be appreciated if you could provide honest and accurate responses to all the questions.

Deadline:
I would very much appreciate it if you could complete the questionnaire by the end of this term to allow for sufficient time for data aggregation and analysis.

Confidentiality:
We are collecting information for the purposes of studying the patterns within groups as a whole, rather than individual respondents. All of the information provided will be treated in the strictest of confidence. Moreover, all identifying information will be coded by an independent person, so no participants can be identified by the researchers. Research findings will be presented in aggregate form, so no specific teams will be recognised. Additionally, your employer will not be given access to any identifying information collected in this survey.

Contacts:
You are free to discuss your participation or any questions with Richard Goater by email (richardg@nate.wa.edu.au) or phone (0413745500). Any person not satisfied with the response of researchers may raise ethics issues or concerns, and may make any complaints about this research project by contacting the Human Research Ethics Office at The University of Western Australia on (08) 6488.3703 or by emailing to hreo-research@uwa.edu.au.

Completion of the questionnaire will be taken as evidence of consent to participate.

Thank you in anticipation for your contribution to this important research!
Richard Goater

Section 1: Team Structure

You may work in a number of different teams at school, please indicate the name of the team you have been asked to consider for this particular survey (i.e. it may have been highlighted in the email you have just opened).

How long have you been working in this team? (Please select the appropriate response)

<table>
<thead>
<tr>
<th>Less than 6 Months</th>
<th>6 months to 1 year</th>
<th>1 - 2 years</th>
<th>3 - 4 years</th>
<th>5 - 6 years</th>
<th>7 - 8 years</th>
<th>9 - 10 years</th>
<th>longer than 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

How many people work in this team?

How would you describe this team? (Please select the appropriate response)

<table>
<thead>
<tr>
<th>Academic Department</th>
<th>Executive/Senior Management Team</th>
<th>Interdisciplinary (e.g. Middle Years)</th>
<th>Within School Action Learning/Project Teams</th>
<th>Middle Management (i.e. Heads of Department Team)</th>
<th>Pastoral Care Team and Student Support Services</th>
<th>Between School Action Learning/Project Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Please provide your name. This will enable us to establish patterns of relationships within your team. Please be assured that your responses are confidential and anonymous as all individual identities are coded and no individuals or teams can be identified.

Please list the other members of this team below:
1. Team Leader or Head of Area/Department
2. Team Member
3. Team Member
4. Team Member
5. Team Member
6. Team Member
7. Team Member
8. Team Member
9. Team Member
10. Team Member

### Section 2: Team Interactions and Vitality

While working with the team of people listed above please answer the following questions.

For each of the items, please indicate the degree to which you think the item is true for you by selecting one of the buttons.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I work closely with these team members in doing my work.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I must frequently coordinate my efforts with these team members.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>My performance is dependent on receiving accurate information from these team members.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>The way I perform my job has a significant impact on these team members.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>My work requires me to consult with these team members frequently.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### While Working in this Team I:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find myself learning from others.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Feel alive and vital.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Continue to learn more as time goes by.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Have energy and spirit.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>See myself continually improving.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Feel alert and awake.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Have developed a lot as a person.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Look forward to each new day.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
</tbody>
</table>

### Section 3: Commitment and Learning

While working with the team of people listed above please answer the following questions.

For each of the items, please indicate the degree to which you think the item is true for you by selecting one of the buttons.

While I have been working as part of this team:
Section 4: Relationships between Team Members

1: Team Leader or Head of Area/Department: Name

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th>Behaves in a manner which is thoughtful of my individual needs</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commends me when I do a better than average job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says things that make me proud to be part of this School.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says positive things about this team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the feelings of team members before acting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2: The name of the second person in the team is

https://uwa.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview&T=1... 7/06/2015
In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Says positive things about this team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says things that make me proud to be part of this School.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the feelings of team members before acting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments me when I do a better than average job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3: The name of the third person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Says things that make me proud to be part of this School.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the feelings of team members before acting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says positive things about this team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments me when I do a better than average job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4: The name of the fourth person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the feelings of team members before acting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Says things that make me proud to be part of this School
Commends me when I do a better than average job.
Behaves in a manner which is thoughtful of my individual needs.
Sees that the interests of team members are given due consideration
Acknowledges improvement in my quality of work.
Challenges me to think about old problems in new ways.
Says positive things about this team
Personally compliments me when I do outstanding work

5: The name of the fifth person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says positive things about this team</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commends me when I do a better than average job</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says things that make me proud to be part of this School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the feelings of team members before acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6: The name of the sixth person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges me to think about old problems in new ways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says things that make me proud to be part of this School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Says positive things about this team</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commends me when I do a better than average job</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considers the feelings of team members before acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7: The name of the seventh person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th>Says things that make me proud to be part of this School.</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Says positive things about this team</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Considers the feelings of team members before acting</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Mentions me when I do a better than average job.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

8: The name of the eighth person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th>Has ideas that have forced me to rethink some things that I have never questioned before</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Says positive things about this team</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Considers the feelings of team members before acting</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Says things that make me proud to be part of this School.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Mentions me when I do a better than average job.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

9: The name of the ninth person in the team is

In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.
In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor.

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has ideas that have forced me to rethink some things that I have never questioned before</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Sees that the interests of team members are given due consideration</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Behaves in a manner which is thoughtful of my individual needs</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Acknowledges improvement in my quality of work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Personally compliments me when I do outstanding work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Encourages me to see changing environments as situations full of opportunities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Challenges me to think about old problems in new ways</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Comments me when I do a better than average job</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Has challenged me to rethink some of my basic assumptions about my work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

You have reached the end of the survey. Your participation is greatly appreciated and valued.

Please click "> >" on the bottom right of this page to submit your responses.
Appendix J: Instruments used to Measure the Dependent Variables

Task Interdependence Instrument (Pearce and Gregersen 1991)

1. I work closely with these team members in doing my work
2. I must frequently coordinate my efforts with these team members
3. My performance is dependent on receiving accurate information from these team members
4. The way I perform my job has a significant impact on these team members
5. My work requires me to consult with these members frequently

Direction, Alignment and Commitment Instrument (Centre for Creative Leadership, 2013)

1. We are all in agreement on what success will look like
2. We all believe that what we are trying to achieve is worthwhile.
3. Our work is united by a common goal.
4. We all agree on a common goal to pursue.
5. The work of each group fits well with the work of all the other groups.
6. The work of each individual is well coordinated with the work of others.
7. Our expectations for one another are clear.
8. People align their efforts with those of others.
9. We are putting our shared success above our individual success.
10. Each one of us is giving the extra effort needed for success.
11. We are committed to succeeding together.
12. Everyone is committed

Team Commitment Instrument (Bishop & Scott 2000)

1. I talk up (brag about) this team to my friends as a great team to work on.
2. I find that my values and the team’s values are very similar.
3. I am proud to tell others that I am part of this team.
4. This team really inspires the very best in me in the way of job performance.
5. I am extremely glad that I chose this team to work with over other teams.
6. I really care about the fate of this team.
7. For me this is the best of all possible teams with which to work.

Thriving Instrument (Porath et al. 2012)

1. Find myself learning from others
2. Feel alive and vital
3. Continue to learn more as time goes by
4. Have energy and spirit
5. See myself continually improving
6. Feel alert and awake
7. Have developed a lot as a person
8. Look forward to each new day
Team Learning Behaviour Instrument (Edmondson 1999)

1. We regularly take time to figure out ways to improve our teams work processes
2. This team tends to handle differences of opinion privately, rather than addressing them directly as a group
3. Team members go out and get all information they possibly can from others—such as students and other parts of the school
4. This team frequently seeks new information that leads us to make important changes
5. In this team, someone always makes sure that we stop to reflect on the teams work process
6. People in this team often speak up to test assumptions about issues under discussion
7. We invite people from outside the team to present information or have discussions with us
Appendix K: Preliminary Analysis; Correlation and Covariance of Latent Factors for Thriving and Direction, Alignment and Commitment

Thriving

Correlations: (Group number 1-Default model)

<table>
<thead>
<tr>
<th>Latent Factors</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitality&lt;-&gt;Learning</td>
<td>0.785</td>
</tr>
</tbody>
</table>

Covariances: (Group number 1-Default model)

<table>
<thead>
<tr>
<th>Latent Factors</th>
<th>Estimate</th>
<th>S.E</th>
<th>C.R</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitality&lt;-&gt;Learning</td>
<td>0.174</td>
<td>0.03</td>
<td>5.801</td>
<td>p&lt;.01</td>
</tr>
</tbody>
</table>

Direction, Alignment and Commitment

Correlations: (Group number 1-Default model)

<table>
<thead>
<tr>
<th>Latent Factors</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction&lt;-&gt;Commitment</td>
<td>0.910</td>
</tr>
<tr>
<td>Direction&lt;-&gt;Alignment</td>
<td>0.840</td>
</tr>
<tr>
<td>Alignment&lt;-&gt;Commitment</td>
<td>0.929</td>
</tr>
</tbody>
</table>

Covariances: (Group number 1-Default model)

<table>
<thead>
<tr>
<th>Latent Factors</th>
<th>Estimate</th>
<th>S.E</th>
<th>C.R</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction&lt;-&gt;Commitment</td>
<td>0.244</td>
<td>0.035</td>
<td>6.906</td>
<td>p&lt;.01</td>
</tr>
<tr>
<td>Direction&lt;-&gt;Alignment</td>
<td>0.248</td>
<td>0.038</td>
<td>6.582</td>
<td>p&lt;.01</td>
</tr>
<tr>
<td>Alignment&lt;-&gt;Commitment</td>
<td>0.301</td>
<td>0.042</td>
<td>7.108</td>
<td>p&lt;.01</td>
</tr>
</tbody>
</table>
### Appendix L: Preliminary Analysis; Exemplar Team 1- Social Network Results for Distribution (decentralisation), Density and Reciprocity

<table>
<thead>
<tr>
<th>Question</th>
<th>Team 1 Decent*</th>
<th>Team 2 Density</th>
<th>Team 1 Reciprocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Says things that make me proud to be part of this school</td>
<td>0.75</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>2. Says positive things about this team</td>
<td>0.75</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>3. Encourages me to see changing environments as situations full of opportunities</td>
<td>0.50</td>
<td>0.17</td>
<td>0.00</td>
</tr>
<tr>
<td>4. Challenges me to think about old problems in new ways</td>
<td>0.25</td>
<td>0.33</td>
<td>0.00</td>
</tr>
<tr>
<td>5. Has ideas that have forced me to rethink some things that I never questioned</td>
<td>0.50</td>
<td>0.67</td>
<td>0.33</td>
</tr>
<tr>
<td>6. Has challenged me to rethink some of my basic assumptions about my work</td>
<td>0.50</td>
<td>0.67</td>
<td>0.33</td>
</tr>
<tr>
<td>7. Considers the feelings of team members before acting</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>8. Behaves in a manner which is thoughtful of my individual needs</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>9. Sees the interests of team members are given due consideration</td>
<td>0.50</td>
<td>0.67</td>
<td>0.33</td>
</tr>
<tr>
<td>10. Comments me when I do a better than average job</td>
<td>0.75</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>11. Acknowledges improvements in my quality of work</td>
<td>0.00</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>12. Personally, compliments me when I do outstanding work</td>
<td>0.75</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**Decentralisation:** Team centralisation explains the extent to which leadership is concentrated in a small number of team members rather than shared by all members in the team. The values range is 0 to 1. Scores were reversed so that 0 indicates that one member has maximum centrality, while 1 indicates that all team members share leadership behaviours and functions.

**Density:** A team’s density is the ratio of the number of leadership connections (referred to as edges) in the group/network, over the total number of possible leadership connections between all individuals. Leadership density is a measure of how well connected a team or group is, in other words how closely knit it is. A perfectly connected team has a density measure of 1.

**Reciprocity:** The degree of reciprocity is measured as the ratio of the number of relations in the team which are reciprocated (i.e. there is a connection/edge in both directions) over the total number of relations in the group/network. This measure is seen as a good indicator of the degree of mutuality and cohesion.
Appendix M: Results of Principal Components Analysis and Confirmatory Factory Analysis for Dependent (interdependence, Thriving, Team Commitment, Team Learning) and Independent (Transformational Leadership) Variables

<table>
<thead>
<tr>
<th>Scale</th>
<th>Task Interdependence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 items</td>
</tr>
<tr>
<td></td>
<td>Pearce &amp; Gregersen (1991)</td>
</tr>
</tbody>
</table>
|       | *For each of the items, please indicate the degree to which you think the item is true for you by selecting one of the buttons*

<table>
<thead>
<tr>
<th>Variable Name (SPSS)</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int 1</td>
<td>I work closely with these team members in doing my work.</td>
</tr>
<tr>
<td>Int 2</td>
<td>I must frequently coordinate my efforts with these team members.</td>
</tr>
<tr>
<td>Int 3</td>
<td>My performance is dependent on receiving accurate information from these team members.</td>
</tr>
<tr>
<td>Int 4</td>
<td>The way I perform my job has a significant impact on these team members.</td>
</tr>
<tr>
<td>Int 5</td>
<td>My work requires me to consult with these team members frequently.</td>
</tr>
</tbody>
</table>

**Range of possible answers**

1. Strongly disagree
2. Disagree
3. Somewhat disagree
4. Neutral
5. Somewhat agree
6. Agree
7. Strongly agree

**Notes following psychometric testing (e.g. scale composition)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>.904</td>
</tr>
<tr>
<td>N</td>
<td>427</td>
</tr>
<tr>
<td>KMO</td>
<td>.843</td>
</tr>
<tr>
<td>Bartlett’s</td>
<td>1408.76 (10) &lt;.001</td>
</tr>
<tr>
<td>Cumulative Variance</td>
<td>72.509%</td>
</tr>
<tr>
<td>Correlations</td>
<td>low of .513 and a high of .766</td>
</tr>
</tbody>
</table>

**Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>Int1</th>
<th>Int2</th>
<th>Int3</th>
<th>Int4</th>
<th>Int5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int1</td>
<td></td>
<td>.766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Int2</td>
<td></td>
<td></td>
<td>.513</td>
<td>.615</td>
<td></td>
</tr>
<tr>
<td>Int3</td>
<td></td>
<td></td>
<td></td>
<td>.586</td>
<td>.613</td>
</tr>
<tr>
<td>Int4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.693</td>
</tr>
</tbody>
</table>

* Significant at p<.001
Total Variance Explained

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.625</td>
<td>72.509</td>
<td>72.509</td>
<td>3.625</td>
<td>72.509</td>
<td>72.509</td>
</tr>
<tr>
<td>2</td>
<td>.600</td>
<td>12.000</td>
<td>84.509</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.300</td>
<td>6.000</td>
<td>90.509</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.277</td>
<td>5.544</td>
<td>96.053</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.197</td>
<td>3.947</td>
<td>100.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

Component Matrix

<table>
<thead>
<tr>
<th>Component</th>
<th>Inter 1</th>
<th>Inter 2</th>
<th>Inter 3</th>
<th>Inter 4</th>
<th>Inter 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.836</td>
<td>.885</td>
<td>.812</td>
<td>.838</td>
<td>.884</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

a. 1 components extracted.
Confirmatory Factor Analysis Results (IBM SPSS Amos 23.0) for Task Interdependence

NFI= .979, TLI=.954, CFI=.981, GFI=.972, SRMS=.0252, RMSEA=.124.

Thriving

<table>
<thead>
<tr>
<th>Scale</th>
<th>Thriving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8 items</td>
</tr>
<tr>
<td></td>
<td>Porath et al. (2012)</td>
</tr>
<tr>
<td></td>
<td>While working in this team I:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable Name (SPSS)</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thriving 1</td>
<td>Find myself learning from others.</td>
</tr>
<tr>
<td>Thriving 2</td>
<td>Feel alive and vital.</td>
</tr>
<tr>
<td>Thriving 3</td>
<td>Continue to learn more as time goes by.</td>
</tr>
<tr>
<td>Thriving 4</td>
<td>Have energy and spirit.</td>
</tr>
<tr>
<td>Thriving 5</td>
<td>See myself continually improving.</td>
</tr>
<tr>
<td>Thriving 6</td>
<td>Feel alert and awake.</td>
</tr>
<tr>
<td>Thriving 7</td>
<td>Have developed a lot as a person.</td>
</tr>
<tr>
<td>Thriving 8</td>
<td>Look forward to each new day.</td>
</tr>
</tbody>
</table>

Range of possible answers

1. Strongly disagree
2. Disagree
3. Somewhat disagree
4. Neutral
5. Somewhat agree
6. Agree
7. Strongly agree
Notes following psychometric testing (e.g. scale composition)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>.948</td>
</tr>
<tr>
<td>N</td>
<td>427</td>
</tr>
<tr>
<td>PCA (1 factor)</td>
<td></td>
</tr>
<tr>
<td>KMO</td>
<td>.920</td>
</tr>
<tr>
<td>Bartlett’s</td>
<td>3071.948 (28) &lt;.001</td>
</tr>
<tr>
<td>Cumulative Variance</td>
<td>Cumulative 73.328%</td>
</tr>
<tr>
<td>Correlations</td>
<td>.538-.844</td>
</tr>
</tbody>
</table>

Correlation Matrix

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Thriving1</th>
<th>Thriving2</th>
<th>Thriving3</th>
<th>Thriving4</th>
<th>Thriving5</th>
<th>Thriving6</th>
<th>Thriving7</th>
<th>Thriving8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thriving1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving2</td>
<td>.642*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving3</td>
<td>.805*</td>
<td>.754*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving4</td>
<td>.560*</td>
<td>.844*</td>
<td>.655*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving5</td>
<td>.692*</td>
<td>.756*</td>
<td>.809*</td>
<td>.693*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving6</td>
<td>.541*</td>
<td>.780*</td>
<td>.607*</td>
<td>.818*</td>
<td>.668*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving7</td>
<td>.630*</td>
<td>.713*</td>
<td>.746*</td>
<td>.640*</td>
<td>.770*</td>
<td>.620*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving8</td>
<td>.538*</td>
<td>.739*</td>
<td>.601*</td>
<td>.757*</td>
<td>.671*</td>
<td>.699*</td>
<td>.682*</td>
<td></td>
</tr>
</tbody>
</table>

*. Significant at \( p < .001 \)

Scree Plot
<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>5.866</td>
<td>73.328</td>
</tr>
<tr>
<td>2</td>
<td>.752</td>
<td>9.398</td>
</tr>
<tr>
<td>3</td>
<td>.394</td>
<td>4.929</td>
</tr>
<tr>
<td>4</td>
<td>.291</td>
<td>3.643</td>
</tr>
<tr>
<td>5</td>
<td>.219</td>
<td>2.736</td>
</tr>
<tr>
<td>6</td>
<td>.205</td>
<td>2.563</td>
</tr>
<tr>
<td>7</td>
<td>.139</td>
<td>1.732</td>
</tr>
<tr>
<td>8</td>
<td>.134</td>
<td>1.670</td>
</tr>
</tbody>
</table>

**Extraction Method:** Principal Component Analysis.

<table>
<thead>
<tr>
<th>Component</th>
<th>Component Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thriving 1 .787</td>
</tr>
<tr>
<td></td>
<td>Thriving 2 .913</td>
</tr>
<tr>
<td></td>
<td>Thriving 3 .871</td>
</tr>
<tr>
<td></td>
<td>Thriving 4 .873</td>
</tr>
<tr>
<td></td>
<td>Thriving 5 .884</td>
</tr>
<tr>
<td></td>
<td>Thriving 6 .842</td>
</tr>
<tr>
<td></td>
<td>Thriving 7 .841</td>
</tr>
<tr>
<td></td>
<td>Thriving 8 .832</td>
</tr>
</tbody>
</table>

**Extraction Method:** Principal Component Analysis.

a. 1 components extracted.
Confirmatory Factor Analysis Results (IBM SPSS Amos 23.0) for Thriving

NFI= .957, TLI= .928, CFI= .961, GFI= .923, SRMR= .0389, RMSEA= .141

<table>
<thead>
<tr>
<th>Scale</th>
<th>Team Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 items</td>
<td>Bishop and Scott (2000)</td>
</tr>
<tr>
<td>While I have been working as part of this team:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable Name (SPSS)</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm1</td>
<td>I talk up (brag about) this team to my friends as a great team to work on.</td>
</tr>
<tr>
<td>Comm2</td>
<td>I find that my values and the team's values are very similar.</td>
</tr>
<tr>
<td>Comm3</td>
<td>I am proud to tell others that I am part of this team.</td>
</tr>
<tr>
<td>Comm4</td>
<td>This team really inspires the very best in me in the way of job performance.</td>
</tr>
<tr>
<td>Comm5</td>
<td>I am extremely glad that I chose this team to work with over other teams.</td>
</tr>
<tr>
<td>Comm6</td>
<td>I really care about the fate of this team.</td>
</tr>
<tr>
<td>Comm7</td>
<td>For me this is the best of all possible teams with which to work.</td>
</tr>
</tbody>
</table>

Range of possible answers

2. Disagree           5. Somewhat agree
3. Somewhat disagree  6. Agree
Notes following psychometric testing (e.g. scale composition)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>.922</td>
</tr>
<tr>
<td>N</td>
<td>423</td>
</tr>
<tr>
<td>KMO</td>
<td>.921</td>
</tr>
<tr>
<td>Bartlett’s</td>
<td>2118.327 (21) &lt; .001</td>
</tr>
<tr>
<td>Cumulative Variance</td>
<td>69.262 %</td>
</tr>
<tr>
<td>Correlations</td>
<td>low of .501 and high of .782</td>
</tr>
</tbody>
</table>

Correlation Matrix

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Comm1</th>
<th>Comm2</th>
<th>Comm3</th>
<th>Comm4</th>
<th>Comm5</th>
<th>Comm6</th>
<th>Comm7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm1</td>
<td></td>
<td>.531*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comm2</td>
<td></td>
<td></td>
<td>.679*</td>
<td>.690*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comm3</td>
<td></td>
<td></td>
<td></td>
<td>.654*</td>
<td>.730*</td>
<td>.774*</td>
<td></td>
</tr>
<tr>
<td>Comm4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.633*</td>
<td>.598*</td>
<td>.712*</td>
</tr>
<tr>
<td>Comm5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.501*</td>
<td>.515*</td>
</tr>
<tr>
<td>Comm6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.592*</td>
</tr>
</tbody>
</table>

Scree Plot

![Scree Plot](image-url)
**Total Variance Explained**

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>4.848</td>
<td>69.262</td>
</tr>
<tr>
<td>2</td>
<td>.533</td>
<td>7.615</td>
</tr>
<tr>
<td>3</td>
<td>.494</td>
<td>7.058</td>
</tr>
<tr>
<td>4</td>
<td>.444</td>
<td>6.339</td>
</tr>
<tr>
<td>5</td>
<td>.257</td>
<td>3.667</td>
</tr>
<tr>
<td>6</td>
<td>.216</td>
<td>3.084</td>
</tr>
<tr>
<td>7</td>
<td>.208</td>
<td>2.975</td>
</tr>
</tbody>
</table>

**Extraction Method:** Principal Component Analysis.

**Component Matrix**

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm1</td>
<td>.787</td>
</tr>
<tr>
<td>Comm2</td>
<td>.798</td>
</tr>
<tr>
<td>Comm3</td>
<td>.886</td>
</tr>
<tr>
<td>Comm4</td>
<td>.892</td>
</tr>
<tr>
<td>Comm5</td>
<td>.868</td>
</tr>
<tr>
<td>Comm6</td>
<td>.733</td>
</tr>
<tr>
<td>Comm7</td>
<td>.850</td>
</tr>
</tbody>
</table>

**Extraction Method:** Principal Component Analysis.

a. 1 components extracted.

**Confirmatory Factor Analysis Results (IBM SPSS Amos 23.0) for Team Commitment**

NFI = .959
TLI = .948
CFI = .965
SRMR = .028
RMSEA = .111
<table>
<thead>
<tr>
<th>Scale</th>
<th>Team Learning Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 items</td>
<td>Edmondson (1999)</td>
</tr>
<tr>
<td><strong>While we are working together:</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable Name (SPSS)</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn1</td>
<td>We regularly take time to figure out ways to improve our team’s work processes.</td>
</tr>
<tr>
<td>Learn2</td>
<td>This team tends to handle differences of opinion privately, rather than addressing them directly as a group.</td>
</tr>
<tr>
<td>Learn3</td>
<td>Team members go out and get all the information they possibly can from others—such as students and other parts of the school.</td>
</tr>
<tr>
<td>Learn4</td>
<td>In this team, someone always makes sure that we stop to reflect on the team’s work process.</td>
</tr>
<tr>
<td>Learn5</td>
<td>People in this team often speak up to test assumptions about issues under discussion.</td>
</tr>
<tr>
<td>Learn6</td>
<td>We invite people from outside the team to present information or have discussions with us.</td>
</tr>
<tr>
<td>Learn7</td>
<td>This team frequently seeks new information that leads us to make important changes.</td>
</tr>
</tbody>
</table>

**Range of possible answers**

1. Strongly disagree  
2. Disagree  
3. Somewhat disagree  
4. Neutral  
5. Somewhat agree  
6. Agree  
7. Strongly agree

**Notes following psychometric testing (e.g. scale composition)**

- Alpha = .979  
- N = 423  
- KMO = .866  
- Bartlett’s = 969.303 (21) < .001  
- Correlations = low of .028 (Item 2) and a high of .593  
- PCA specifying 1 factor with Items 1 to 7; Cumulative Variance = 49.311%  
- PCA specifying 1 factor without Item 2; Cumulative Variance = 57.347%
Correlation Matrix

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Learn1</th>
<th>Learn2</th>
<th>Learn3</th>
<th>Learn4</th>
<th>Learn5</th>
<th>Learn6</th>
<th>Learn7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn2</td>
<td></td>
<td>.028</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn3</td>
<td>.401*</td>
<td></td>
<td>.210*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn4</td>
<td>.583*</td>
<td>.141</td>
<td>.580*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn5</td>
<td>.546*</td>
<td>.063</td>
<td>.403*</td>
<td>.524*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn6</td>
<td>.518*</td>
<td>.053</td>
<td>.495*</td>
<td>.593*</td>
<td>.520*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn7</td>
<td>.408*</td>
<td>.116</td>
<td>.429*</td>
<td>.425*</td>
<td>.420*</td>
<td>.396*</td>
<td></td>
</tr>
</tbody>
</table>

Total Variance Explained

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>3.441</td>
<td>57.347</td>
</tr>
<tr>
<td>2</td>
<td>.678</td>
<td>11.293</td>
</tr>
<tr>
<td>3</td>
<td>.622</td>
<td>10.359</td>
</tr>
<tr>
<td>4</td>
<td>.468</td>
<td>7.795</td>
</tr>
<tr>
<td>5</td>
<td>.446</td>
<td>7.438</td>
</tr>
<tr>
<td>6</td>
<td>.346</td>
<td>5.768</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
<table>
<thead>
<tr>
<th>Component Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>TL1              .762</td>
</tr>
<tr>
<td>TL2*             .186</td>
</tr>
<tr>
<td>TL3              .735</td>
</tr>
<tr>
<td>TL4              .832</td>
</tr>
<tr>
<td>TL5              .751</td>
</tr>
<tr>
<td>TL6              .780</td>
</tr>
<tr>
<td>TL7              .667</td>
</tr>
</tbody>
</table>

**Extraction Method**: Principal Component Analysis.

a. **1 component extracted.**

*Note that the item Team Learning (TL 2) has a relatively low loading

<table>
<thead>
<tr>
<th>Component Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>Learn1           .769</td>
</tr>
<tr>
<td>Learn3           .745</td>
</tr>
<tr>
<td>Learn4           .834</td>
</tr>
<tr>
<td>Learn5           .750</td>
</tr>
<tr>
<td>Learn6           .784</td>
</tr>
<tr>
<td>Learn7           .675</td>
</tr>
</tbody>
</table>

**Extraction Method**: Principal Component Analysis.

a. **1 component extracted.**

*Note that the item Learn2 (TL 2) has been removed.*
Confirmatory Factor Analysis Results (IBM SPSS Amos 23.0) for Team Learning Behaviour Items One to Seven

NFI=.950
TLI=.945
CFI=.963
SRMR=.0398
RMSEA=.077

Confirmatory Factor Analysis Results (IBM SPSS Amos 23.0) for Team Learning with Item Two removed
NFI=.970, TLI=.965, CFI=.979, SRMR=.0294, RMSEA=.072
## Scale: Transformational Leadership

**12 Items**  
Rafferty & Griffin (2004)  
*In relation to the person listed immediately above, could you please answer the following questions by selecting the most appropriate descriptor*

<table>
<thead>
<tr>
<th>Variable Name (SPSS)</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead1</td>
<td>Says things that make me proud to be part of this School.</td>
</tr>
<tr>
<td>Lead2</td>
<td>Says positive things about this team.</td>
</tr>
<tr>
<td>Lead3</td>
<td>Encourages me to see changing environments as situations full of opportunities.</td>
</tr>
<tr>
<td>Lead4</td>
<td>Challenges me to think about old problems in new ways.</td>
</tr>
<tr>
<td>Lead5</td>
<td>Has ideas that have forced me to rethink some things that I have never questioned before.</td>
</tr>
<tr>
<td>Lead6</td>
<td>Has challenged me to rethink some of my basic assumptions about my work.</td>
</tr>
<tr>
<td>Lead7</td>
<td>Considers the feelings of team members before acting.</td>
</tr>
<tr>
<td>Lead8</td>
<td>Behaves in a manner which is thoughtful of my individual needs.</td>
</tr>
<tr>
<td>Lead9</td>
<td>Sees that the interests of team members are given due consideration.</td>
</tr>
<tr>
<td>Lead10</td>
<td>Commends me when I do a better than average job.</td>
</tr>
<tr>
<td>Lead11</td>
<td>Acknowledges improvement in my quality of work.</td>
</tr>
<tr>
<td>Lead12</td>
<td>Personally, compliments me when I do outstanding work.</td>
</tr>
</tbody>
</table>

### Range of possible answers

1. Strongly disagree  
2. Disagree  
3. Somewhat disagree  
4. Neutral  
5. Somewhat agree  
6. Agree  
7. Strongly agree

### Notes following psychometric testing (e.g. scale composition)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>= .950</td>
</tr>
<tr>
<td>N</td>
<td>= 371</td>
</tr>
<tr>
<td>KMO</td>
<td>= .939</td>
</tr>
<tr>
<td>Bartlett’s</td>
<td>= 3630.634 (66) &lt;.001</td>
</tr>
<tr>
<td>PCA 2 components extracted.</td>
<td></td>
</tr>
<tr>
<td>Cumulative Variance</td>
<td>= 74.46%</td>
</tr>
<tr>
<td>Correlations</td>
<td>= .472-.861</td>
</tr>
<tr>
<td>Correlation</td>
<td>Lead1</td>
</tr>
<tr>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>Lead1</td>
<td></td>
</tr>
<tr>
<td>Lead2</td>
<td>.685*</td>
</tr>
<tr>
<td>Lead3</td>
<td>.695*</td>
</tr>
<tr>
<td>Lead4</td>
<td>.641*</td>
</tr>
<tr>
<td>Lead5</td>
<td>.595*</td>
</tr>
<tr>
<td>Lead6</td>
<td>.561*</td>
</tr>
<tr>
<td>Lead7</td>
<td>.618*</td>
</tr>
<tr>
<td>Lead8</td>
<td>.607*</td>
</tr>
<tr>
<td>Lead9</td>
<td>.646*</td>
</tr>
<tr>
<td>Lead10</td>
<td>.625*</td>
</tr>
<tr>
<td>Lead11</td>
<td>.651*</td>
</tr>
<tr>
<td>Lead12</td>
<td>.633*</td>
</tr>
</tbody>
</table>

*Significant at $p<.001$
<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
<td>Cumulative %</td>
</tr>
<tr>
<td>1</td>
<td>7.797</td>
<td>64.977</td>
<td>64.977</td>
</tr>
<tr>
<td>3</td>
<td>.765</td>
<td>6.378</td>
<td>80.843</td>
</tr>
<tr>
<td>4</td>
<td>.450</td>
<td>3.753</td>
<td>84.596</td>
</tr>
<tr>
<td>5</td>
<td>.344</td>
<td>2.869</td>
<td>87.465</td>
</tr>
<tr>
<td>6</td>
<td>.262</td>
<td>2.184</td>
<td>89.649</td>
</tr>
<tr>
<td>7</td>
<td>.258</td>
<td>2.152</td>
<td>91.801</td>
</tr>
<tr>
<td>8</td>
<td>.239</td>
<td>1.989</td>
<td>93.790</td>
</tr>
<tr>
<td>9</td>
<td>.212</td>
<td>1.770</td>
<td>95.560</td>
</tr>
<tr>
<td>10</td>
<td>.208</td>
<td>1.730</td>
<td>97.291</td>
</tr>
<tr>
<td>11</td>
<td>.200</td>
<td>1.670</td>
<td>98.961</td>
</tr>
<tr>
<td>12</td>
<td>.125</td>
<td>1.039</td>
<td>100.000</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

<sup>a</sup> When components are correlated, sums of squared loadings cannot be added to obtain a total variance.
<table>
<thead>
<tr>
<th></th>
<th>Component</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead 1</td>
<td></td>
<td>.588</td>
<td>.306</td>
</tr>
<tr>
<td>Lead 2</td>
<td></td>
<td>.818</td>
<td></td>
</tr>
<tr>
<td>Lead 3</td>
<td></td>
<td></td>
<td>.683</td>
</tr>
<tr>
<td>Lead 4</td>
<td></td>
<td></td>
<td>.878</td>
</tr>
<tr>
<td>Lead 5</td>
<td></td>
<td></td>
<td>.941</td>
</tr>
<tr>
<td>Lead 6</td>
<td></td>
<td></td>
<td>.928</td>
</tr>
<tr>
<td>Lead 7</td>
<td></td>
<td>.893</td>
<td></td>
</tr>
<tr>
<td>Lead 8</td>
<td></td>
<td>.883</td>
<td></td>
</tr>
<tr>
<td>Lead 9</td>
<td></td>
<td>.880</td>
<td></td>
</tr>
<tr>
<td>Lead 10</td>
<td></td>
<td>.814</td>
<td></td>
</tr>
<tr>
<td>Lead 11</td>
<td></td>
<td>.641</td>
<td></td>
</tr>
<tr>
<td>Lead 12</td>
<td></td>
<td>.826</td>
<td></td>
</tr>
</tbody>
</table>

**Extraction Method:** Principal Component Analysis.

**Rotation Method:** Oblimin with Kaiser Normalization.

a. Rotation converged in 5 iterations.
Confirmatory Factor Analysis Results (IBM SPSS Amos 23.0) for Transformational Leadership

NFI=.953, TLI=.950, CFI=.964, GFI=.919, SRMR=.0410, RMSEA =.090
### Appendix N: Hypothesis One; Descriptive Statistics and Correlations (DV; Task Interdependence) (IV; PTL Density) (5.1)

#### Hypothesis One; Descriptive Statistics and Correlations (DV; Task Interdependence) (IV; PTL Density)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TI</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Interdependence (TI)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>0.049</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>-0.084</td>
<td>0.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td>0.466***</td>
<td>-0.317**</td>
<td>-0.055</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.861</td>
<td>4.429</td>
<td>4.14</td>
<td>0.601</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.817</td>
<td>2.502</td>
<td>1.314</td>
<td>0.191</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

#### Hypothesis One; Hierarchical Regression Model (DV; Task Interdependence) (IV; PTL Density)

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.103</td>
<td>.011</td>
<td></td>
<td>.020</td>
<td>.380</td>
<td>.061</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>-.057</td>
<td>.730</td>
<td>-.091</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.517</td>
<td>.267***</td>
<td>.257***</td>
<td>.075</td>
<td>.035</td>
<td>.229*</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>-.051</td>
<td>.063</td>
<td>-.083</td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.286</td>
<td>.455</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
### Hypothesis One: Descriptive Statistics and Correlations (DV; Task Interdependence) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TI</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLDi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Interdependence (TI)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.049</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>-.084</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td>.202*</td>
<td>-.253**</td>
<td>.002</td>
<td>1</td>
</tr>
</tbody>
</table>

Means: 5.86 4.43 4.14 0.685
Standard Deviations: 0.817 2.50 1.314 0.113

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

### Hypothesis One: Hierarchical Regression Model (DV; Task Interdependence) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.103</td>
<td>.011</td>
<td></td>
<td>.02</td>
<td>.038</td>
<td>.061</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>-.057</td>
<td>.073</td>
<td>-.091</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.247</td>
<td>.061</td>
<td>.050</td>
<td>.039</td>
<td>.039</td>
<td>.120</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>-.062</td>
<td>.072</td>
<td>-.099</td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td></td>
<td></td>
<td></td>
<td>1.674</td>
<td>.851</td>
<td>.232</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
### Hypothesis One; Descriptive Statistics and Correlations (DV; Task Interdependence) (IV; PTL Reciprocity)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TI</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Interdependence (TI)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.049</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>-.084</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td>.436***</td>
<td>-.331**</td>
<td>.026</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.86</td>
<td>4.43</td>
<td>4.14</td>
<td>0.588</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.817</td>
<td>2.502</td>
<td>1.314</td>
<td>0.223</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

### Hypothesis One; Hierarchical Regression Model (DV; Task Interdependence) (IV; PTL Reciprocity)

<table>
<thead>
<tr>
<th>Step</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.103</td>
<td>.011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.497</td>
<td>.247</td>
<td>.237***</td>
<td>.770</td>
<td>.036</td>
<td>.236*</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td>1.891</td>
<td>.397</td>
<td>.517***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV

B = Unstandardised coefficient; β = Standardised coefficient

SE = Standard Error
### Appendix O: Hypothesis Two: Descriptive Statistics and Correlations (DV; Team Learning) (IV; PTL Density)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TL</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Learning Behaviours (TL)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>-.156</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.111</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td>.612***</td>
<td>-.317**</td>
<td>-.055</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.32</td>
<td>4.43</td>
<td>4.14</td>
<td>0.6001</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.652</td>
<td>2.503</td>
<td>1.314</td>
<td>0.1909</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

<table>
<thead>
<tr>
<th>Variables</th>
<th>TL</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Learning Behaviours (TL)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>-.156</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.111</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td>.612***</td>
<td>-.317**</td>
<td>-.055</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.32</td>
<td>4.43</td>
<td>4.14</td>
<td>0.6001</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.652</td>
<td>2.503</td>
<td>1.314</td>
<td>0.1909</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

<table>
<thead>
<tr>
<th>Hypothesis Two; Hierarchical Regression Model (DV; Team Learning) (IV; PTL Density)</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.204</td>
<td>.042</td>
<td></td>
<td>-.045</td>
<td>.030</td>
<td>-.172</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.066</td>
<td>.057</td>
<td>.133</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td>.629</td>
<td>.396***</td>
<td>.354***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td>.007</td>
<td>.025</td>
<td>.026</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.071</td>
<td>.046</td>
<td>.143</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td></td>
<td></td>
<td></td>
<td>2.144</td>
<td>.330</td>
<td>.628***</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
Hypothesis Two; Descriptive Statistics and Correlations (DV; Team Learning Behaviours) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TL</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLDi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Learning Behaviours (TL)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>-.156</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.111</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td>.293**</td>
<td>-.253**</td>
<td>.002</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.32</td>
<td>4.43</td>
<td>4.14</td>
<td>0.685</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.652</td>
<td>2.503</td>
<td>1.314</td>
<td>0.113</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

Hypothesis Two; Hierarchical Regression Model (DV; Team Learning Behaviours) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Step</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.204</td>
<td>.042</td>
<td></td>
<td>-.045</td>
<td>.300</td>
<td>-.172</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.329</td>
<td>.108*</td>
<td>.067*</td>
<td>-.027</td>
<td>.030</td>
<td>-.104</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td>1.535</td>
<td>.662</td>
<td>.267*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
Hypothesis Two; Descriptive Statistics and Correlations (DV; Team Learning Behaviours) (IV; PTL Reciprocity)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TL</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Learning Behaviours (TL)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>-.156</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.111</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td>.493***</td>
<td>-.033**</td>
<td>.026</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.32</td>
<td>4.43</td>
<td>4.14</td>
<td>0.588</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.652</td>
<td>2.503</td>
<td>1.314</td>
<td>0.2232</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

<table>
<thead>
<tr>
<th>Hypothesis Two; Hierarchical Regression Model (DV; Team Learning) (IV; PTL Reciprocity)</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>0.204</td>
<td>0.042</td>
<td></td>
<td>-.045</td>
<td>.030</td>
<td>-.172</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.066</td>
<td>.057</td>
<td>.133</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.503</td>
<td>.253***</td>
<td>.211***</td>
<td>-.002</td>
<td>.028</td>
<td>-.007</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.049</td>
<td>.051</td>
<td>.099</td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td></td>
<td></td>
<td></td>
<td>1.427</td>
<td>.316</td>
<td>.489***</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
Appendix P: Hypothesis Three; Descriptive Statistics and Correlations (DV; Team Commitment) (IV; PTL Density)

<table>
<thead>
<tr>
<th>Hypothesis Three; Hierarchical Regression Model (DV; Team Commitment) (IV; PTL Density)</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.130</td>
<td>.017</td>
<td></td>
<td>.020</td>
<td>.034</td>
<td>.070</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.055</td>
<td>.064</td>
<td>.101</td>
</tr>
<tr>
<td>Step 2</td>
<td>.677</td>
<td>.459***</td>
<td>.442***</td>
<td>.084</td>
<td>.027</td>
<td>.291*</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td>.062</td>
<td>.048</td>
<td>.112</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>2.656</td>
<td>.346</td>
<td>.701***</td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

- R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
- B = Unstandardised coefficient; β = Standardised coefficient
- SE = Standard Error

Hypothesis Three; Descriptive Statistics and Correlations (DV; Team Commitment) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TC</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLDi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Commitment (TC)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.082</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team</td>
<td>.109</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td>.326**</td>
<td>-.253**</td>
<td>.002</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.60</td>
<td>4.43</td>
<td>4.14</td>
<td>0.68</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.72</td>
<td>2.50</td>
<td>1.31</td>
<td>0.11</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001
### Hypothesis Three; Hierarchical Regression Model (DV; Team Commitment) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Step</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.13</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.38</td>
<td>.143**</td>
<td>.126**</td>
<td>.05</td>
<td>.03</td>
<td>.16</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td>2.34</td>
<td>.72</td>
<td>.367**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error

### Hypothesis Three; Descriptive Statistics and Correlations (DV; Team Commitment) (IV; PTL Reciprocity)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TC</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Commitment (TC)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.082</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.109</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td>.413**</td>
<td>-.331**</td>
<td>.026</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.60</td>
<td>4.43</td>
<td>4.14</td>
<td>0.59</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.72</td>
<td>2.50</td>
<td>1.31</td>
<td>0.22</td>
</tr>
</tbody>
</table>

**Note.** Statistical significance: *p < .05; **p < .01; ***p < .001
### Hypothesis Three: Hierarchical Regression Model (DV; Team Commitment) (IV; PTL Reciprocity)

<table>
<thead>
<tr>
<th>Step</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.130</td>
<td>.017</td>
<td></td>
<td>.020</td>
<td>.034</td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.479</td>
<td>.229***</td>
<td>.212***</td>
<td>.068</td>
<td>.032</td>
<td>.238</td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.037</td>
<td>.058</td>
<td>.067</td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td>1.586</td>
<td>.356</td>
<td>.490***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Statistical significance: *p < .05; **p < .01; ***p < .001

- R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
- B = Unstandardised coefficient; β = Standardised coefficient
- SE = Standard Error
Appendix Q: Hypothesis Four; Descriptive Statistics and Correlations (DV; Team Thriving) (IV; PTL Density)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TH</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thriving (TH)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td>.009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td>.099</td>
<td>.125</td>
<td>1</td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td></td>
<td>.652***</td>
<td>-.317**</td>
<td>-.055</td>
</tr>
<tr>
<td>Means</td>
<td>5.79</td>
<td>4.43</td>
<td>4.14</td>
<td>0.60</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.67</td>
<td>2.50</td>
<td>1.31</td>
<td>0.19</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

<table>
<thead>
<tr>
<th>Step 1; Hypothesis Four; Hierarchical Regression Model (DV; Team Thriving) (IV; PTL Density)</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.099</td>
<td>.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td>-.001</td>
<td>.031</td>
<td>-.003</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td>.700</td>
<td>.489***</td>
<td>.480***</td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td></td>
<td>.061</td>
<td>.024</td>
<td>.227</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.056</td>
<td>.043</td>
<td>.111</td>
</tr>
<tr>
<td>PTL Density (PTLD)</td>
<td></td>
<td></td>
<td></td>
<td>2.554</td>
<td>.311</td>
<td>.730***</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
Hypothesis Four; Descriptive Statistics and Correlations (DV; Team Thriving) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TH</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLDi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Thriving (TH)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.009</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.099</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td>.312**</td>
<td>-.253</td>
<td>.002</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

Hypothesis Four; Hierarchical Regression Model (DV; Team Thriving) (IV; PTL Distribution)

<table>
<thead>
<tr>
<th>Step 1</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.099</td>
<td>.010</td>
<td></td>
<td>-.001</td>
<td>.031</td>
<td>-.003</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.050</td>
<td>.060</td>
<td>.099</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.336</td>
<td>.113</td>
<td>.103**</td>
<td>.022</td>
<td>.037</td>
<td>.082</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.045</td>
<td>.057</td>
<td>.088</td>
</tr>
<tr>
<td>PTL Distribution (PTLDi)</td>
<td></td>
<td></td>
<td></td>
<td>1.958</td>
<td>.676</td>
<td>.332**</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
**Hypothesis Four; Descriptive Statistics and Correlations (DV: Team Thriving) (IV: PTL Reciprocity)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>TH</th>
<th>AVT</th>
<th>HMP</th>
<th>PTLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Thriving (TH)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.009</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.099</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td>.467***</td>
<td>-.331**</td>
<td>.026</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.79</td>
<td>4.43</td>
<td>4.14</td>
<td>0.59</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.67</td>
<td>2.50</td>
<td>1.31</td>
<td>0.22</td>
</tr>
</tbody>
</table>

*Note.* Statistical significance: *p < .05; **p < .01; ***p < .001

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.990</td>
<td>.010</td>
<td></td>
<td>-.001</td>
<td>.031</td>
<td>-.003</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.050</td>
<td>.060</td>
<td>.099</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.502</td>
<td>.252***</td>
<td>.242***</td>
<td>.046</td>
<td>.029</td>
<td>.174</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td></td>
<td>.320</td>
<td>.052</td>
<td>.063</td>
</tr>
<tr>
<td>PTL Reciprocity (PTLR)</td>
<td></td>
<td></td>
<td></td>
<td>1.564</td>
<td>.324</td>
<td>.523***</td>
</tr>
</tbody>
</table>

*Note.* Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV's; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
**Appendix R: Hypothesis Five; Descriptive Statistics and Correlations (DV; Team Learning Behaviours) (IV; Thriving)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>TL</th>
<th>AVT</th>
<th>HMP</th>
<th>TH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Learning Behaviours (TL)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>-.156</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.111</td>
<td>.125</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Thriving (TH)</td>
<td>.763***</td>
<td>.009</td>
<td>.099</td>
<td>1</td>
</tr>
<tr>
<td>Means</td>
<td>5.32</td>
<td>4.43</td>
<td>4.14</td>
<td>5.79</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.65</td>
<td>2.50</td>
<td>1.31</td>
<td>0.67</td>
</tr>
</tbody>
</table>

*Note.* Statistical significance: *p < .05; **p < .01; ***p < .001

<table>
<thead>
<tr>
<th>Hypothesis Five; Hierarchical Regression Model (DV; Team Learning Behaviours) (IV; Thriving)</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>.204</td>
<td>.042</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td>-.045</td>
<td>.030</td>
<td>-.172</td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td>.066</td>
<td>.057</td>
<td>.133</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>.782</td>
<td>.612</td>
<td>.571***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td></td>
<td></td>
<td>-.044</td>
<td>.019</td>
<td>-.170*</td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td></td>
<td></td>
<td>.029</td>
<td>.037</td>
<td>.058</td>
<td></td>
</tr>
<tr>
<td>Thriving (TH)</td>
<td></td>
<td></td>
<td>.742</td>
<td>.072</td>
<td>.759***</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Statistical significance: *p < .05; **p < .01; ***p < .001

R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error
### Appendix S: Hypothesis Six; Descriptive Statistics and Correlations (DV; Team Commitment) (IV; Thriving)

<table>
<thead>
<tr>
<th>Variables</th>
<th>TC</th>
<th>AVT</th>
<th>HMP</th>
<th>TH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Commitment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.082</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.109</td>
<td>.125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving (TH)</td>
<td>.827***</td>
<td>.009</td>
<td>.099</td>
<td></td>
</tr>
<tr>
<td>Means</td>
<td>5.60</td>
<td>4.43</td>
<td>4.14</td>
<td>5.79</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>0.72</td>
<td>2.50</td>
<td>1.31</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001

### Hypothesis Six; Hierarchical Regression Model (DV; Team Commitment) (IV; Thriving)

<table>
<thead>
<tr>
<th>Step 1</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.130</td>
<td>.017</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.020</td>
<td>.034</td>
<td>.070</td>
<td>.055</td>
<td>.064</td>
<td>.101</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>R</th>
<th>R²</th>
<th>(Δ) R²</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Time in the Team (AVT)</td>
<td>.831</td>
<td>.690</td>
<td>.674***</td>
<td>.021</td>
<td>.019</td>
<td>.073</td>
</tr>
<tr>
<td>How many people work in this team (HMP)</td>
<td>.010</td>
<td>.037</td>
<td>.019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thriving (TH)</td>
<td>.893</td>
<td>.017</td>
<td>.825***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Statistical significance: *p < .05; **p < .01; ***p < .001
R² = amount of variance explained by IV’s; (Δ) R² = additional variance in DV
B = Unstandardised coefficient; β = Standardised coefficient
SE = Standard Error