

The Effects of Self-talk on Self-efficacy, Collective Efficacy, and Performance

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Abstract

The primary purpose of this study was to examine the impact of different types of self-talk (i.e., group-oriented self-talk versus individual-oriented self-talk) upon self-efficacy, collective efficacy, and performance of a dart-throwing task in a group setting. The second object was to examine the interaction individuals' between individualistic or collectivistic orientations and self-talk on their perceptions of self-efficacy and collective efficacy. Participants were 80 university students (age, $M = 22.25$ years, $SD = 4.41$). A series of 3 (self-talk intervention levels) X 2 (individualism-collectivism levels) between-groups ANOVAs revealed that both self-efficacy and collective efficacy beliefs were significantly higher in the group-oriented self-talk condition than in the control condition. Consistent with efficacy beliefs, significant differences in performance improvement were found between the group-oriented-self-talk and the control condition. However, no interaction between self-talk and individualism-collectivism was found for self-efficacy or collective efficacy. The results suggest that in interdependent contexts, group-oriented self-talk strategies could be more effective in enhancing participants' confidence in their own abilities, their team's abilities, and performance than individual-oriented self-talk strategies. Limitations and implications for the future study of efficacy beliefs within a group performance setting are discussed.

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Chapter 1

INTRODUCTION

1.1 Orientation

Sport psychology researchers have devoted considerable effort to understanding the relationship between cognitive processes and performance. Within this area, one prominent line of inquiry has examined the effects of two distinct forms of task-specific confidence or ‘efficacy perceptions’, namely self-efficacy and collective efficacy, in relation to individual and group performance. Bandura (1997) defined *self-efficacy* as the belief one has in his or her own ability to execute a specific task; on the other hand, *collective efficacy* refers to a group’s belief in its capability to produce a desired goal. According to Bandura’s Social Cognitive Theory, self-efficacy and collective efficacy are distinct forms of social cognitions that influence key outcomes in both individual and group contexts. A considerable body of research has found self-efficacy to be strongly predictive of individual performance in various sports, including baseball, golf, and swimming (e.g., Beauchamp, Bray, & Albinson, 2002; George, 1994; Miller, 1993). Similarly, collective efficacy has been supported as a predictor of team performance in sports such as American football, basketball, and ice hockey (e.g., Heuze, Raimbault, & Fontayne, 2006; Myers, Feltz, & Short, 2004).

Although research has revealed that efficacy beliefs are positively associated with a number of adaptive outcomes in addition to performance such as, effort, group cohesion, and persistence (e.g., Beauchamp et al., 2002; Feltz & Lirgg, 1998; Greenless, Graydon, & Maynard, 1999; Heuze et al., 2006; Myers et al., 2004; Watkins, Garcia, & Turek, 1994), clear evidence of how these efficacy beliefs can be generated and maintained is not as readily available. However, as suggested by Bandura (1997), efficacy beliefs are influenced

by four main sources: (a) performance accomplishments, (b) vicarious experiences, (c) verbal persuasion (including self-talk), and finally, (d) affective states. Empirical evidence relating to this aspect of Bandura's model has shown that athletes, coaches, and applied sport psychologists view 'self-talk' (i.e., a form of self-directed verbal persuasion) as one of the most effective efficacy enhancing techniques (Vargas-Tonsing, Myers, & Feltz, 2004; Weinberg, Grove, & Jackson, 1992). For example, Weinberg et al. (1992) found that tennis coaches frequently encouraged their players to use positive self-talk to increase their confidence in their own ability (i.e., self-efficacy). Additionally, Vargas-Tonsing and colleagues (Vargas-Tonsing et al., 2004) revealed that positive self-talk and verbal persuasion are deemed to be two of the most frequently-used and efficient techniques for enhancing athletes' efficacy as reported by athletes and coaches.

According to Feltz, Short, and Sullivan (2008), in a recent review of the self-talk – efficacy literature in sport, "the actual number of research studies is surprisingly low given the number of times self-talk has been suggested as an intervention technique for enhancing self-efficacy" (p. 103). There are a few studies, however, that have attempted to investigate the impact of self-talk on self-efficacy beliefs (Gould & Weiss, 1981; Hamel, 1992; Hardy, Hall, Gibbs, & Greenslade, 2005; Weinberg, 1986). For example, Hardy et al. (2005) examined the effect of positive self-talk upon self-efficacy perceptions about a crunch sit-up task and found that self-efficacy beliefs were significantly increased by self-talk. However, given that Bandura (1997) theorised that comparable sources would exist for self-efficacy and collective efficacy, it is surprising that the relationship between self-talk and collective efficacy beliefs has been overlooked at present. Indeed, collective efficacy beliefs are an important determinant of team performance (Myers & Feltz, 2007), and thus, it is important to examine how self-talk affects both self-efficacy as well as collective efficacy perceptions. Also, it could be argued that individual-oriented self-talk (e.g., 'I can do it') may be more effective for the development and maintenance of self-efficacy, while group-oriented self-talk (e.g., 'we can do it') may be more efficient for the development and maintenance of collective efficacy beliefs. This issue has not been explored yet, and its examination is clearly warranted.

Moreover, Bandura (1997, 2001) suggested that efficacy beliefs are, in part, socially constructed and that the construction may differ as a function of social cognitions. One such dimension is 'individualism and collectivism' (i.e., the degree to which a person views him/herself as either an individual or a member of a group). As individualism-collectivism construct directly influences self-perception and motivation (Hofstede, 1991; Triandis,

1995), it may play a role in how efficacy beliefs are developed, the way in which they are activated, and the purposes to which they are directed (Bandura, 2001, 2002; Oettingen & Zosuls, 2006; Pajares, 2002). Recent studies have found that collectivists tend to be efficacious and productive under 'group-oriented' systems whereas individualists tend to achieve high perceived efficacy under 'individual-oriented' systems (e.g., Earley, 1994, 1999; Gibson, 2001; Klassen, 2004). Earley's (1994) investigation also provided preliminary evidence that individualists selected individual-referenced information, but collectivists selected group-referenced information in establishing their efficacy perceptions. Despite these findings, to date, there appears to be no sport-specific research addressing the role of individualism-collectivism in shaping self-efficacy and collective efficacy beliefs.

Based on the identified gaps in the above research areas (i.e., the content of self-talk and individualism-collectivism), this study was designed to determine how individual-focused and group-focused self-talk interventions affect self-efficacy, collective efficacy, and performance among people with both individualistic and collectivistic orientations. The specific purposes of this study are presented below.

1.2 Purpose of the study

This study had two primary objectives. Firstly, this investigation aimed to examine self-efficacy, collective efficacy, and dart throwing performance among individuals using either individual-centred or group-centred self-talk in a team setting. Secondly, by comparing levels of self-efficacy and collective efficacy between participants with individualistic or collectivistic orientations, this study sought to examine whether these orientations may influence the way in which self-talk affects perceptions of self-efficacy and collective efficacy.

1.3 Significance of the study

Increasing awareness of the importance of efficacy beliefs in sport has created a need for better understanding of the factors that influence both self-efficacy and collective efficacy. This study will provide fundamental information about the effects of different types of self-talk upon self-efficacy, collective efficacy, and performance in group contexts. This

study will also provide novel insight into the role of individualist and collectivist orientations in connection with different forms of efficacy.

1.4 Terminology

A number of terms are repeatedly used throughout this manuscript. These terms, along with their conceptual definitions are provided below. Some of these definitions are also mentioned in the main text of this thesis.

1. *Self-efficacy* – an individual's belief in his or her ability to execute a specific task (Bandura, 1997).
2. *Collective efficacy* – a group's belief in its capacities to organize and execute actions to produce a desired goal (Bandura, 1997).
3. *Self-talk* – either covert or overt self-verbalizations, which can serve both instructional and motivational functions (Hardy, 2006).
4. *Individualism* – an individual's perceptions and attitudes in terms of seeing oneself as independent from a group (Triandis, 1995).
5. *Collectivism* – an individual's perceptions and attitudes in terms of viewing oneself as a part of one or more groups (Triandis, 1995).

1.5 Hypotheses

1. Participants using individual-centred self-talk will report higher levels of self-efficacy than those using group-centred self-talk. Conversely, participants using group-centred self-talk will report higher levels of collective efficacy than those using individual-centred self-talk.
2. Performance will be better in both an individual-oriented and a group-oriented self-talk condition than a control condition.

3. Individualism-collectivism will interact with the type of self-talk to differentially influence efficacy beliefs. Specifically, individualists will be more strongly affected by individually-focused self-talk, while collectivists will be more strongly affected by group-oriented self-talk.

Chapter 2

Review of the literature

2.1 Introduction

“The biggest thing is to have the mind-set and the belief you can win every tournament going on. A lot of guys don’t have that. Jack Nicklaus had it” (cited in Weinberg & Gould, 2003, p. 308). As Tiger Woods alluded to, highly successful athletes and sport teams possess strong beliefs in their personal and group capabilities to achieve optimal outcomes from their performance. As a reflection of these beliefs, a firm sense of self-efficacy and collective efficacy has been recognized as a key to optimal performance (Bandura, 1997). Indeed, a considerable body of research has indicated that self-efficacy significantly correlates with individual performance (e.g., Lindsley, Brass, & Thomas, 1995; Morin & Latham, 2000). Recently, research also suggests that collective efficacy (i.e., the application of self-efficacy to a group) is closely associated with performance at the team level (Feltz & Lirgg, 1998; Myers, Feltz, & Short, 2004). Notwithstanding this literature base, there remains a relative lack of experimental evidence regarding the generation of these efficacy beliefs and the effectiveness of efficacy-enhancing strategies.

2.2 Self-efficacy

2.2.1 *Definition*

Self-efficacy has been defined by Bandura (1997) as an individual’s belief in his or her ability to execute a specific task. As opposed to global ‘confidence’ levels, self-efficacy is

not a general trait; rather, it is a person's belief in his or her abilities to perform a specific task (e.g., playing soccer, throwing a dart, etc). Pajares (2002) noted that perceptions of self-efficacy provide the foundation for human motivation, well-being, and personal accomplishment because people have little incentive to persevere in the face of obstacles unless they believe that their actions can create the outcomes they desire. Moreover, strong self-efficacy beliefs lead to greater effort, persistence, resilience, and positive affective states in approaching specific tasks (Bandura, 1997; Pajares, 2002).

2.2.2 *Self-efficacy and sport*

Utilising Bandura's (1997) theoretical tenets, a substantial number of studies have revealed that increases in self-efficacy are positively correlated with individual performance in sport and exercise settings (e.g., Beauchamp et al., 2002; George, 1994; Miller, 1993; Treasure, Monson, & Lox, 1996). For example, George (1994) reported that self-efficacy expectations were positively related to baseball hitting performance. Indeed, self-efficacy has emerged as a strong predictor of performance in various team sports such as baseball, basketball, field hockey, and soccer (Haney & Long, 1995; Watkins et al., 1994). More recently, Moritz and her colleagues (Moritz, Feltz, Fahrabach, & Mack, 2000) conducted a meta-analysis of the self-efficacy literature in sport. Overall their findings provided support for Bandura's suggestion, by demonstrating that a moderate overall correlation existed between performance and efficacy beliefs ($r = .38$).

Butler (1996) explained the impact of high or low self-efficacy beliefs on cognitive processes, which is demonstrated in Figure 2.1. When an athlete is confronted with a specific task, he or she initially judges his or her level of effectiveness with regard to successfully performing the task. Certainty of effectiveness signifies high efficacy beliefs, whereas uncertainty signifies low efficacy beliefs. The outcome of the task will then provide feedback that influences the athlete's self-efficacy. Three processes are demonstrated:

- (1) The estimate of self-efficacy is *validated* – high self-efficacy is confirmed by success, or low self-efficacy is confirmed by failure.
- (2) The estimate of self-efficacy is *invalidated*, leading to *hostility* when the outcome is unexpected. Hostility is the athlete's attempt to uphold their initial perceptions despite contrary proof. A propensity to rationalise, deny or excuse poor

performance may be observed. The reason for the athlete's hostility is to preserve a belief in ability.

- (3) Alternatively, the estimate of self-efficacy is *invalidated*, leading to *guilt* when the outcome becomes more common. Guilt is seen as the athlete's acknowledgment that there is a need to change the initial perceptions. This may follow-on from an unexpected outcome. For example, a golfer experiencing consistently poor results may feel that they have disappointed themselves by performing below expectation. This may be interpreted as a shortfall in potential, which may then lead to a loss of belief in ability.

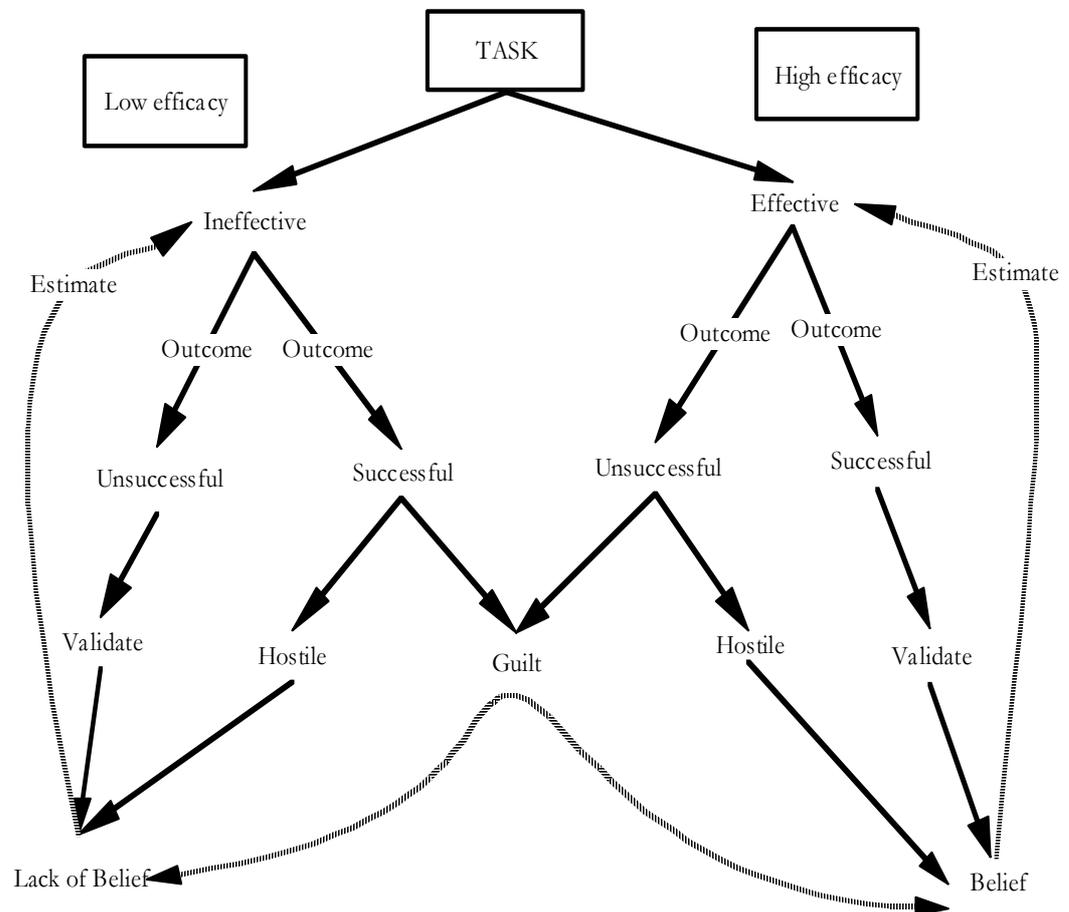


Figure 2.1. Model of self-efficacy (Butler, 1996)

Butler (1996) illustrates that an athlete's perception of self-efficacy determines how she or he approaches a particular task. It is important to note, however, that there is relatively little research examining the specific relationships between the efficacy beliefs and these specific

outcomes in sporting settings. Weinberg, Gould, and Jackson (1979) manipulated perceptions of self-efficacy by having participants compete with a confederate on a muscular leg-endurance task. Results showed that participants in the high self-efficacy group maintained their muscle contraction significantly longer than those in the low self-efficacy group on the first trial. Following a reported failure, participants in the high self-efficacy group showed an increase in persistence during a second trial, whereas the low self-efficacy participants showed a decrease in persistence. Given the overwhelming body of evidence relating to efficacy perceptions in the athletic domain (Feltz et al., 2008), it can be argued that coaches and athletes should seek effective ways of enhancing self-efficacy beliefs, in order to achieve successful outcomes.

2.2.3 Sources of self-efficacy

Theoretically, perceptions of self-efficacy are underpinned by four principle sources of information: (a) performance accomplishments, (b) vicarious experience, (c) verbal persuasion, and (d) affective states (Figure 2.2; Bandura, 1997). Efficacy beliefs predict actual performance and are considered crucial mediating variables between sport-related tactics and performance achievement (Bandura, 1997; Feltz & Lirgg, 2001). Therefore, an understanding of the sources of efficacy beliefs is likely a crucial factor in seeking to increase an athlete's performance (Vealey, Hayashi, Garner-Holman, & Gracobbi, 1998).

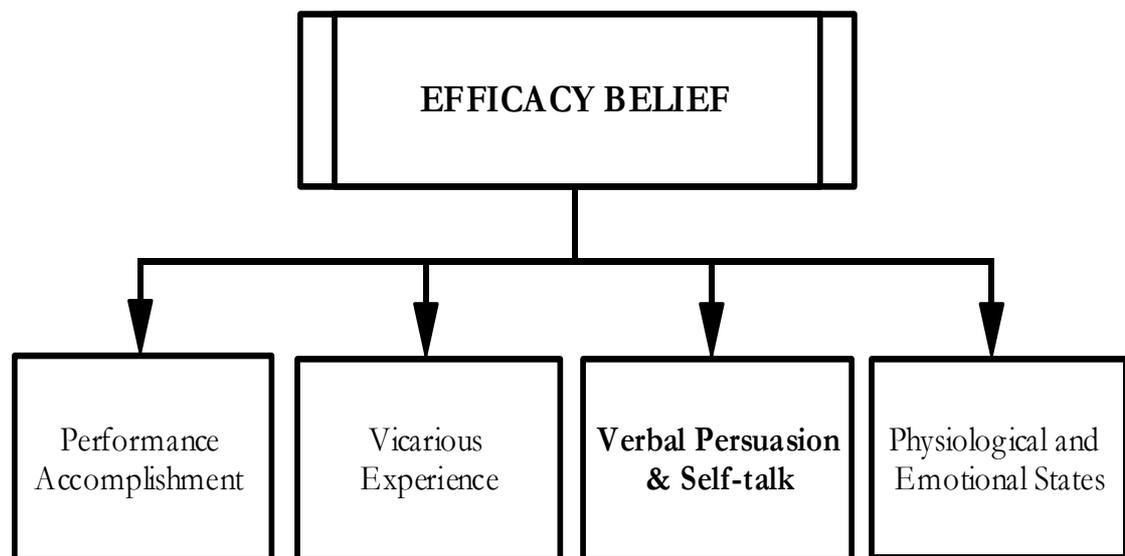


Figure 2.2. Sources of efficacy belief (Adapted from Feltz & Lirgg, 2001)

The most influential source of these beliefs is **performance accomplishments**, which provide the behavioural evidence of an individual's capability to succeed in a given context. Individuals take part in tasks and activities, interpret their outcomes, use the interpretations to enhance beliefs about their capacity to perform subsequent tasks or activities, and act in concert with the beliefs formed (Pajares, 2002). As a result, successful outcomes tend to raise self-efficacy, while unsuccessful outcomes generally lower it (Muretta, 2004). Furthermore, Morris and Koehn (2004) suggest that a person who achieves a successful outcome independently will develop stronger perceptions of self-efficacy than if the person was to accomplish the same outcome with help from others.

Within sport-related activities, performance accomplishments are widely accepted as the most powerful influence on self-efficacy as they provide direct evidence of personal capabilities (Bandura, 1997; Butler, 1996; Feltz, Landers, & Raeder, 1979; Feltz & Lirgg, 2001; Weinberg, 1986; Wise & Trunnell, 2001). For example, Wise and Trunnell (2001) found that performance accomplishments led to stronger increases in bench-press efficacy than the observation of models or verbal persuasions. Research has also revealed that sport-related activities performed successfully during initial attempts produce greater efficacy than those where failure occurs early in learning (e.g., Chase, Feltz, & Lirgg, 2003; Chase, Magyar, & Drake, 2005; Fitzsimmons, Landers, Thomas, & Van der Mars, 1991). However, performance accomplishments might have less impact on efficacy beliefs when an individual doubts their ability to mount a similar effort in the future. The impact of performance accomplishments may also be moderated by situations and environments (Bray, Jones, & Owen, 2002; Butler, 1996; Pajares, 2002).

Self-efficacy beliefs are also derived from **vicarious experience**, where the observation of others performing a specific task with particular consequences will influence an individual's own expectations about performance capabilities on that task (Bandura, 1997). Overall, this source is deemed to be weaker than performance accomplishments in terms of the generation of self-efficacy beliefs, but it can be particularly influential in contexts where people are unsure about their own abilities or have limited prior experience (Bandura, 1997). For example, the less experience people have had with similar situations, the more they will depend on the observation of others to judge their own abilities (Feltz & Lirgg, 2001). Research has indicated that vicarious experience significantly influences efficacy beliefs when people observe skilled performance on a similar task (e.g., Gould & Weiss, 1981; Lirgg & Feltz, 1991). That is, the impact of observing performance greatly depends on how relevant an observed task is and how competent the performer is.

The third factor that strengthens people's beliefs about their capacity for successful performance is **verbal persuasion**. It is easier to maintain a sense of efficacy when confronted with difficulties if significant others convey faith in an individual's capabilities rather than expressing doubts. Effective persuasions from credible sources foster people's beliefs in their capacities while at the same time ensuring that the envisioned success is attainable. People who are repeatedly told that they possess the capabilities to succeed in a given task tend to mobilize greater effort and sustain it (Bandura, 1997). Similarly, personal efficacy perceptions may be substantially undermined by negative feedback, most notably when the source of information is perceived as credible and knowledgeable (e.g., a coach).

Generally, it is acknowledged that verbal persuasion has a weaker influence on efficacy beliefs than mastery or vicarious experiences. Nevertheless, research highlights the important role of verbal encouragement in the development of self-efficacy (e.g., Chase, 1998; Vargas-Tonsing et al., 2004; Wise & Trunnell, 2001; Zeldin & Pajares, 2000). More specifically, Vargas-Tonsing et al. (2004) investigated coaches' and athletes' perceptions about the effectiveness of efficacy-enhancing techniques in various sports. Both athletes and coaches reported that positive talk and verbal persuasion were highly effective in reinforcing efficacy beliefs. Likewise, Chase (1998) found that verbal encouragement from significant others had a beneficial impact on self-efficacy beliefs for physical activity and sport among children and adolescents.

Alongside verbal persuasion from significant others, Bandura (1997) argued that self-persuasion (i.e., self-talk) can generate enhanced self-efficacy beliefs. Several sport psychology researchers have also suggested the possible positive effect of self-talk on self-efficacy beliefs (e.g., Park, 2000; Weinberg et al., 1992). Despite this, relatively little is known about the relationship between self-talk statements and self-efficacy (Feltz et al., 2006; Hardy, 2006). Considering the potential effectiveness of self-talk and the convenience of its implementation, there is little doubt that there is a need for further research in this area. Relationships between self-talk and self-efficacy within the sport domain will be more specifically addressed in section 2.4.

Physiological and affective states (e.g., pain, anxiety, and fatigue) also provide information from which individuals can estimate their capabilities and vulnerability, thereby influencing efficacy beliefs. Somatic and cognitive information tends to be perceived and interpreted, and the interpretation of the information reflects an individual's judgement of his or her capabilities (Bandura, 1997). Strong emotional reactions to an activity offer cues

about the expected success or failure of its outcome. In particular, negative affective reactions can lower self-efficacy beliefs and trigger additional stress and arousal that may bring about the unsuccessful performance people fear (Bandura, 1997).

Athletes regularly translate such information into anxiety signals which, in turn, create reservations concerning their ability to achieve. Therefore, such physiological arousal has the propensity to reduce self-efficacy expectations. Alternatively, by using reframing techniques, athletes may consider the physical and emotional sensations experienced as a signal that the body has been stimulated and is prepared to perform in an optimal way, thus serving to enhance (or at least maintain) their sense of self-efficacy.

In addition to the aforementioned four sources, self-efficacy beliefs may be influenced by additional factors, such as age, gender, and individual difference variables, including individualism-collectivism (Pajares, 2002; Vealey, Hayashi, Garner-Holman, & Gracobb, 1998). These factors provide a general frame of reference for attending to, weighting, and integrating potentially relevant information about task-specific capabilities (Pajares, 2002). Therefore, further investigation of these moderating factors is also warranted.

2.3 Collective efficacy

2.3.1 Definition

In recognition of the fact that many human endeavours take place within a social or group context, Bandura (1997) proposed the concept of collective efficacy to reflect a group's beliefs in its capabilities to organize and execute actions to produce a desired goal. Collective efficacy is not simply the sum of self-efficacy beliefs of people in a group. Rather, it is a more complex group-oriented attribute that emerges out of the group's coordinative and interactive dynamics. Collective efficacy is deemed to be conceptually distinct from self-efficacy in that it refers to group members' perceptions of their conjoint capabilities with regard to team activities (Bandura, 1997; Goddard, Hoy, & Woolfolk Hoy, 2004; Zaccaro, Blair, Peterson, & Zazanis, 1995). However, in much the same way that self-efficacy beliefs influence individuals, stronger perceptions of collective efficacy are believed to result in greater effort on shared undertakings, better persistence in the face of obstacles, and higher levels of group performance (Bandura, 2001).

2.3.2 *Collective efficacy and sport*

In sport, Feltz and Lirgg (2001) emphasize that collective efficacy relates not only to how well each and every group member can use his or her individual resources but also to how well those resources can be coordinated and combined. Collective efficacy beliefs are important because, theoretically, they impact what people attempt to do as group members, how much effort they spend on their team endeavours, and their persistence when collective efforts fail to produce quick results or meet with difficulties (Bandura, 1997; Feltz et al., 2008). Since a large number of sports require sustained and coordinated team efforts to generate successful performances, each team member's belief regarding his or her team's capabilities understandably affects the team's performance. At present, the concept of collective efficacy has been given less scholarly attention in comparison to the numerous studies on self-efficacy. To date, Beauchamp (2007) and Ronglan (2007) reasoned that most research investigating the collective efficacy construct has examined its relations with important correlates such as team cohesion, effort, and persistence (e.g., Greenless et al., 1999; Heuze et al., 2006; Kozub & McDonnell, 2000).

In an effort to expand scientific understanding of how efficacy beliefs are formed and how they influence sport performance, efficacy theorists have previously attempted to explore the relationships among self-efficacy, collective efficacy, and team performance (e.g., Feltz & Lirgg, 1998; Magyar et al., 2004; Moritz & Watson, 1998; Watson, Chemers, & Preiser, 2001). For example, in Feltz and Lirgg's (1998) study assessing self-efficacy and collective efficacy perceptions among collegiate ice hockey players, it was found that team (i.e., collective) efficacy beliefs significantly increased after a win and significantly decreased after a loss, whereas self-efficacy beliefs were not impacted. These findings supported Bandura's (1997) suggestion that in team contexts, collective efficacy perceptions may be more closely associated with team performance than self-efficacy perceptions. More recently, Myers, Feltz, and Short (2004) examined the reciprocal relationship between self-efficacy, collective efficacy, and team performance over an American football season. The findings revealed that aggregated collective efficacy prior to performance was a positive predictor of subsequent offensive football performance, and also that previous offensive performance was predictive of subsequent collective efficacy perceptions. Aside from performance accomplishments, however, and bearing in mind the positive impact of self-efficacy and collective efficacy in relation to individual and team performance (e.g., Moritz et al., 2000; Myers, Paiement, & Feltz, 2007), further investigation is clearly warranted that examines how these beliefs develop and are maintained in sport.

2.3.3 Sources of collective efficacy

According to Bandura, “perceived personal and collective efficacy differ in the unit of agency, but both forms of efficacy beliefs have similar sources, serve similar functions, and operate through similar processes” (1997, p. 478). As a result, the four processes outlined in relation to self-efficacy (i.e., performance accomplishments, vicarious experiences, verbal persuasion, and affective states), should also play an important role in the development of collective efficacy beliefs (Zaccaro et al., 1995).

For example, regarding performance accomplishments, Goddard and Goddard (2001) found that successful teaching experience was a significant determinant of teachers’ collective efficacy across schools. In sport, using multilevel modelling, Watson and colleagues (Watson, Chemers, & Preiser, 2001) examined collective efficacy at the individual and group level in a collegiate basketball team, reporting that collective efficacy was significantly predicted by team performance. However, some variations in collective efficacy may not solely reflect performance accomplishments at the group level, and so it is important to understand the various other sources of collective efficacy information (Goddard, Hoy, & Woolfolk Hoy, 2004). For instance, collective efficacy perceptions may be impacted by observing successful groups, especially those that achieve goals in the face of familiar opportunities and constraints (Goddard et al., 2004).

Verbal persuasion has also been shown to increase collective efficacy in team settings (Gibson, 2001). For example, Vargas-Tonsing and Bartholomew (2006) provided empirical evidence for the effect of verbal persuasion upon collective efficacy in sport. The results revealed that participants reported a greater degree of team efficacy after listening to a motivational talk from their coach in comparison to their team efficacy prior to the talk. This issue will be more specifically addressed in section 2.4.

As individuals react to arousal, anxiety, stress, or excitement, so do groups. Teams with strong beliefs in their collective capability can meet challenges in the face of disruptive forces, whereas less efficacious groups tend to function less effectively. Hence, affective states may affect how groups interpret and react to the myriad difficulties they confront (Goddard et al., 2004). More recently, Ronglan (2007) investigated the production and maintenance of collective efficacy within an elite basketball team during a season. Through 17 qualitative post-season interviews, results showed that the production of team efficacy, as an interpersonal process, was brought about by performance accomplishments,

interpretations of team history, preparations for upcoming contests, and positive persuasions.

Besides the four primary sources, perceptions of collective efficacy are theorized to be underpinned by several additional factors. One such variable is individuals' self-efficacy beliefs. Indeed, as Feltz and colleagues proposed, "a team's confidence is undoubtedly rooted in and affected by confidence on the part of the individuals" (Feltz et al., 2008, p. 239). In support, Watson et al. (2001) found a positive relationship between self-efficacy and collective efficacy in basketball teams. Results showed that individuals that held relatively high personal efficacy beliefs also tended to possess positive perceptions of collective efficacy. More recently, Magyar and colleagues (Magyar, Feltz, & Simpson, 2004) also found that self-efficacy was the strongest predictor of personal perceptions of 'team efficacy' perceptions within young rowing crews.

Chow and Feltz (2007) also noted that a collective efficacy beliefs may be influenced by further determinants such as leadership, group cohesion, motivational climate, and team size which are unique to group contexts. Recent studies have shown empirical evidence for relationships between collective efficacy and these factors (e.g., Heuze et al., 2006; Magyar et al., 2004; Watson et al., 2001). For example, Heuze and colleagues explored the effect of group cohesion on collective efficacy in professional basketball teams. They found collective efficacy beliefs were positively related to group cohesion. However, still little research in this topic has been conducted.

Although Bandura (1997) suggested that both self-efficacy and collective efficacy beliefs were influenced by the main four sources, Chase, Feltz, and Lirgg (2003) found differences among individual players and teams with respect to the sources of information selected for personal and team efficacy. Therefore, players may not always rely on the same information for collective efficacy beliefs as they select for personal efficacy beliefs. In order to maximize both self-efficacy and collective efficacy, further investigation is required that explores the effectiveness of different variables in relation to bolstering self-efficacy and collective efficacy beliefs.

2.4 Self-talk and efficacy beliefs

Bandura (1997) argued that verbal persuasion from not only significant others, but also oneself, can enhance efficacy beliefs and performance. More specifically, he noted, “that inner speech...serves as the principle vehicle of thought and self-direction” (p. 224). As such, the deliberate use of ‘self-talk’ can be considered a form of verbal persuasion. Drawing from Bandura’s assumption, the development of affirmative statements that guide a specific task can be an effective way to enhance both efficacy beliefs and performance as it can: (a) improve learning and retention by assisting him or her to focus on the particular task, (b) confirm the importance of strategies that create successful outcomes, and (c) provide repeated affirmation that one can control one’s own thinking processes (Hardy, 2006).

In support of Bandura’s assertions, research within various sporting contexts has highlighted the effectiveness of self-talk as a way of increasing athletes’ self-efficacy (e.g., Park, 2000; Vargas-Tonsing et al., 2004; Weinberg et al., 1992). For example, Weinberg, Grove, and Jackson (1992) compared strategies for building self-efficacy in tennis between American and Australian coaches. Tennis coaches from both countries frequently encouraged their players to use positive self-talk for enhancing self-efficacy. In research on a related construct, Park (2000) also found that Korean national-class athlete used motivational self-talk to reinforce their perceptions in their own capabilities. More recently, Vargas-Tonsing et al. (2004) reported how athletes and coaches perceived the effectiveness of psychological techniques in enhancing efficacy beliefs within various sports (e.g., baseball, basketball, softball, and soccer) at individual and group levels. Contrary to Bandura’s theoretical claim that verbal persuasion is weaker than performance accomplishments and vicarious experience, results demonstrated that both coaches and athletes selected ‘self-talk’ as a more frequently-used technique than either past performance or vicarious experiences.

Despite these evidence that self-talk is efficient in increasing self-efficacy perceptions, self-talk studies have mainly focused on the relationship between self-talk and performance in various sports, including basketball, golf, soccer, and water-polo (e.g., Brewer, Havey, & Van Raalte, 2002; Chroni, Perkos, & Theodorakis, 2002; Hatzigeoriadis, Theodorakis, & Zourbanos, 2004; Johson, Hrycaiko, Johson, & Halas, 2004). Indeed, the previous research has shown evidence for the positive impact of self-talk on athletic performance (e.g., Hatzigeoriadis et al., 2004; Chroni et al., 2002). However, sport-based investigation regarding the impact of self-talk upon efficacy perceptions is lacking (Feltz et al., 2008). To

date, there are only a few studies directly addressing the effect of positive self-talk on self-efficacy (e.g., Cumming, Nordin, Horton, & Reynolds, 2006; Gould & Weiss, 1981; Hamel, 1992; Hardy, Hall, Gibbs, & Greenslade, 2005). Gould and Weiss (1981) and Hamel (1992) investigated how positive self-talk affects participants' self-efficacy perceptions about muscular endurance and baseball batting performance, respectively. In both studies, although a significant main effect for self-talk was not found; the researchers suggested that positive self-efficacy perceptions were logically linked to the development and use of positive self-talk strategies.

Recently, Hardy et al. (2005) provided preliminary evidence for the positive relationship between self-talk and self-efficacy perceptions on a sit-up task. Participants were randomly assigned to one of three self-talk conditions (i.e., instructional self-talk, motivational self-talk, or control), and those in the self-talk groups were asked to use covert self-talk only. Self-efficacy beliefs were measured by two task-specific items, ranging from 0 (*not at all confident*) to 100 (*extremely confident*), specifically: (1) "how confident are you in your ability to carry out the sit-up task", and (2) "how confident are you that you will do well on the task?". Results showed that regardless of the content of self-talk, the interventions produced a higher level of self-efficacy than the control condition.

In relation to collective efficacy beliefs, empirical evidence both within and the outside of sport is sparse. Within sport, Ronglan (2007) reported that positive verbal persuasion resulted in increases in collective efficacy perceptions within a female handball team. Vargas-Tonsing and Bartholomew (2006) also provided empirical evidence for the effect of verbal persuasion on collective efficacy, demonstrating that participants reported an increase in team efficacy after listening to a motivational talk from their coach. Instructional talk from the coaches, on the other hand, did not affect collective efficacy beliefs.

Furthermore, although self-talk was not the sole intervention, Patchell (2006) implemented a 9-week intervention consisting of motivational general-imagery, team building activities, motivational self-talk strategies, and constructive performance appraisals, to reinforce collective efficacy beliefs in an elite male basketball team. Collective efficacy was measured by a 7-item 'Basketball Collective Efficacy Scale' assessing the degree of confidence in the capabilities of the team, team members, and coaching staff. Results showed that players exposed to the 9-week intervention reported significantly higher perceptions of collective efficacy than those in a control group. The author suggested that by using positive and

motivational self-talk interventions, players may attain higher levels of control over their internal cognitive representations, ultimately enhancing their confidence in their own and their team's abilities. However, specific investigation of the direct link between self-talk and collective efficacy beliefs is, at present, lacking.

Outside of sport, Brown (2003) investigated the impact of verbal self-guidance training (i.e., a form of self-talk intervention designed to enhance the application of skills learned in training) on collective efficacy in a business context. Participants in this study were allocated to small groups and were subsequently asked to discuss and develop self-talk scripts concerning performance in either individual or group contexts. More specifically, these scripts consisted of: (a) a negative statement (e.g., 'there is no way that I/we can finish this project in time'); (b) a neutral question (e.g., 'what can I/we do?'); and (c) a positive statement (e.g., 'I/we can develop a time schedule of what tasks need to be completed by what time'). Each statement was later repeated by the participants, first aloud and then silently. The results showed that this self-talk intervention resulted in high perceptions of collective efficacy.

However, two limitations are apparent in Brown's (2003) study. First, because participants were allowed to select one of two types of self-talk script (i.e., individual-oriented "I" statements or group-oriented "we" statements), the referent of self-talk may have partly determined its effectiveness in enhancing their beliefs in their team's abilities. Second, the distinction between the impact upon self-efficacy and collective efficacy perceptions could not be made, as self-efficacy beliefs were not measured. Bearing these limitations in mind, it is possible that, in sport contexts, group-referenced words or phrases (e.g., "we can do this") may exist alongside individual-oriented self-talk statements (e.g., "I can do this"), and implementing this kind of persuasive strategy in relation to group performance capabilities may indeed serve to influence individuals' collective efficacy perceptions. Given that one type of self-talk focuses on the individual's ability, and the other focuses on the group's collective capabilities, it is likely that 'individual-oriented' and 'group-oriented' self-talk may be most effective in promoting self-efficacy and collective efficacy beliefs, respectively. However, at present, this issue has not been explored, and further research that takes into account the referent of such statements within interdependent contexts (i.e., "I" and/or "we") is warranted.

2.5 Role of individualism and collectivism in efficacy beliefs

Social psychologists have made numerous attempts to understand the causes and consequences of people behaving in individualistic and collectivist ways. Triandis (1995) defined individualism as an individual's perceptions and attitudes in terms of seeing oneself as independent from a group. Individualism implies that (a) creating a positive sense of self and feeling good about oneself and personal success are valued, (b) well-being and life satisfaction is derived from an open emotional expression and attainment of one's personal goals, and (c) judgement, reasoning and causal inference are mainly focused on the person. On the other hand, collectivism, which refers to an individual's perceptions and attitudes in terms of viewing oneself as a part of one or more groups, implies that (a) valued personal traits reflect the goals of groups, such as maintaining harmonious relationships with close others, (b) successfully carrying out social roles and obligations is the important source of well-being and life satisfaction, and (c) social context, situational constraints, and social roles figure prominently in person perception and causal reasoning (Hofstede, 1991; Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 1995). In particular, Triandis argued that the dimension of individualism-collectivism is directly related to self-perceptions and motivation. That is, individualists are more likely to focus on personal needs, rights, and capacities, while collectivists find it natural to think about the needs, capabilities, and goals of their group. Also, achievement motivation is individually-oriented among individualists and socially-oriented among collectivists.

With regard to these orientations, Bandura proposed, "the influence of individualistic and collectivistic orientations on performance operates largely through beliefs of individual and group efficacy and their motivational impact" (1997, p. 32). That is, individualists are more likely to achieve high perceived efficacy and productivity when individually performing activities; collectivists are more likely to be most efficacious and productive when managing activities together as a group. Drawing from Bandura's (1997) proposal, recent research has examined the impact of individualism-collectivism in relation to self-efficacy and collective efficacy beliefs (e.g., Earley, 1994, 1999; Klassen, 2004; Oettingen & Zosuls, 2006; Oyserman et al., 2002). For example, Earley (1999) found that people high in collectivistic tendencies reported stronger perceptions of collective efficacy than self-efficacy, but individualists perceived a greater degree of self-efficacy than collective efficacy. Similar results were found in connection with students' math efficacy beliefs (Klassen, 2004).

Furthermore, it has been postulated that one's levels of individualism or collectivism may affect the appraisal of information that underpins efficacy beliefs (Earley, 1994; Erez & Earley, 1993; Triandis, 1995). To test the above suggestion, Earley (1994) investigated the effects of 'individual-focused' and 'group-focused' training on daily service performance and self-efficacy among individualist and collectivistic managers. The individual-oriented training consisted of information about a participant's prior personal performance, individual performance enhancing strategies, and a lecture focused on how the participant's prior performance might be used to achieve future personal successes. The group-focused training consisted of the same course as the individual-focused training, but it emphasised group performance and successes. The results revealed that individualists performed better and perceived high levels of self-efficacy when receiving individual-focused training compared to group-focused training. Conversely, among collectivists, group-focused training produced better performance and a stronger sense of self-efficacy. These findings have been supported by additional research revealing that individualism-collectivism may be associated with efficacy perceptions regarding various tasks such as job search behaviour, academic performance, and management (Eden & Aviram, 1993; Klassen, 2004; VonDras, 2005). However, there has been very little investigation of collective efficacy in relation to individualism-collectivism, and sport-based examination of this individual difference factor is even more rare.

2.6 Summary

A growing body of research has verified the positive effects of self-efficacy and collective efficacy on individual and team performance. However, limited studies have attempted to offer insight into how self-efficacy and collective efficacy beliefs are formed and how they are maintained. Drawing from Bandura's (2002) and Earley's (1994) theoretical assumptions, as well as existing empirical evidence, there are several issues to be considered in order to broaden our understanding of efficacy beliefs: (a) the role of self-talk in enhancing self-efficacy and collective efficacy perceptions and performance; (b) the unique effects of individual-oriented versus group-oriented self-talk in reinforcing self-efficacy and collective efficacy beliefs; and (c) the extent to which tendencies toward individualism and collectivism may combine with self-talk strategies in order to determine personal and group efficacy beliefs.

Chapter 3

Methods and Procedures

3.1 Participants

Eighty university students (40 males and 40 females) participated in this study on a voluntary basis. The majority of participants were undergraduate sport science students and received course credit for their participation. Participants ranged in age from 18 to 40 years with a mean of 22.25 ($SD = 4.41$), and all of them had normal (or corrected to normal) vision and hearing. None of the participants reported any other physical impairments that would have limited their participation in this study. Prior to data collection, procedures were approved by the university's Human Research Ethics Committee (see Appendix I), and all participants gave their written, informed consent.

3.2 Measures and Manipulations

3.2.1 *Individualism-Collectivism*

Traditionally, individualism-collectivism can be measured at two levels: the cultural level and the individual level. These two types of measures are often highly correlated, with correlation coefficients approaching or exceeding $r = .80$ (Triandis, 1995). At an individual level, the INDCOL questionnaire (Singelis, Triandis, Bhawuk, & Gelfand, 1995; see Appendix II) is considered one of the most reliable measures of individualism-collectivism

across countries such as Korea, Singapore, and the United States (e.g., Oyserman et al., 2002; Robert, Lee, & Chan, 2006).

The INDCOL questionnaire contains 32 items assessing four-elements of individualism-collectivism: horizontal individualism (e.g., I often do “my own thing”), horizontal collectivism (e.g., I feel good when I cooperate with others), vertical individualism (e.g., It is important to me that I do my job better than others), and vertical collectivism (e.g., I usually sacrifice my self-interest for the benefit of the group). To make items more appropriate for participants and for the context of the current study, the wording of items 9, 13, and 16 was modified from “co-workers” to “friends or classmates”. Responses were then made on a 9-point scale with scale anchors ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). Overall scores (16 items each) for individualism-collectivism were computed.

With respect to psychometric properties of the INDCOL scales, reliability and validity evidence presented by Singelis and Triandis (1995) supported the INDCOL as a sound measure of individualism-collectivism. Their study with 165 American university students revealed acceptable internal consistency values for individualism and collectivism, respectively. More recently, a number of further studies have provided evidence of construct validity for the INDCOL (e.g., Gouveia, Clemente, & Espinosa, 2003; Robert, Lee, & Chan, 2006; Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis & Gelfand, 1998). For example, a study by Robert and colleagues (Robert, Lee, & Chan, 2006) reported support for the construct validity of the INDCOL across cultures and languages (e.g., America, Singapore, and Korea).

3.2.2 Self-talk intervention

Based on suggestions from five academics familiar with efficacy theory, 5 statements reflecting personal efficacy, 5 statements reflecting collective efficacy, and 5 neutral statements were devised (see Table 3.1). These statements were affirmative and specific to dart throwing performance, except for the neutral statements which had no performance references. In addition, the content of the individual-centred self-talk statements and group-centred statements was identical, with the only difference between them being the object of the statements – “*I*” (e.g., “I am a confident performer”) or “*we*” (e.g., “We are confident performers”). Participants were asked to read one of these statement clusters aloud so they could be digitally recorded on a desktop computer. Emphasis was placed on

an “enthusiastic and believable” reading of the statements, and participants were permitted to re-record the statements if they wished.

Table 3.1

Self-talk statements for the experimental groups and control group

Individual-focused self-talk statements
<ol style="list-style-type: none"> 1. I am a confident performer. 2. I believe in my ability. 3. I am focused and ready. 4. My skill will improve with every throw. 5. I will perform well.
Group-focused self-talk statements
<ol style="list-style-type: none"> 1. We are confident performers. 2. We believe in our ability. 3. We are focused and ready. 4. Our skill will improve with every throw. 5. We will perform well.
Self-talk statements for a control group
<ol style="list-style-type: none"> 1. I live in Perth. 2. I am a student at UWA. 3. I am female/ male. 4. I am ____(age)___ years old. 5. I have ____ (colour) _____ eyes.

3.2.3 Self-efficacy and Collective Efficacy

Efficacy beliefs were measured in a hierarchical manner based on Bandura’s (2006) and Myers and Feltz’s (2007) recommendations for constructing self-efficacy and collective efficacy measures. According to Bandura, the standard procedure for measuring efficacy beliefs is to create items that contain different levels of task demands, and that allow people to rate the strength of their belief in their ability to execute the required task at ‘each level’. Bandura also emphasises that items should be phrased in terms of “can do” rather than “will do”. Generally, participants are instructed to report their levels of confidence in successfully executing a given task on an 11 point-scale (ranging from 0-10 or 0-100),

ranging from ‘*not confident*’ to ‘*very confident*’ (e.g., Bray, Brawley, & Carron, 2002; Cumming et al., 2006; Garza & Feltz, 1998; Wise & Trunnell, 2001).

With respect to the assessment of perceived collective efficacy at a team level, four approaches may be taken (Myers & Feltz, 2007): (a) aggregating players’ perceptions of self-efficacy, (b) aggregating players’ own confidence in their whole team’s capabilities (i.e., “to rate your confidence in your team’s capabilities”), (c) aggregating players’ individual perceptions of the team’s confidence in its capabilities (i.e., “to rate your team’s confidence in its capabilities”), or (d) using a team discussion to obtain a single estimation about the team’s capabilities. Sport-specific research typically uses either the second approach “rate your confidence that your team can..” (e.g., Feltz & Lirgg, 1998) or the third approach “rate your team’s confidence in...” (e.g., Heuze et al., 2006). A study conducted by Short and her colleagues (Short et al., 2002) found both the second and third approaches to be reliable, demonstrating high correlations between the two different methods of assessing collective efficacy (between $r = .65$ and $r = .90$). However, because people have better access to their individual beliefs about a group’s capabilities, rather than to a group’s collective beliefs about its capabilities, recent recommendations suggest that the second approach is favourable (Myers & Feltz, 2007).

Based on this information, self-efficacy and collective efficacy questionnaires were developed for this study that focused specifically on this dart-throwing task. As shown in Table 3.2, self-efficacy and collective efficacy beliefs were determined by assessing participant’s confidence in personal performance and team performance, respectively. All statements followed the format “please rate your confidence that **you as an individual** (self-efficacy) can score the specified number of points on your next set of 10 throws”, or “please rate your confidence that **your team as a whole** (collective efficacy) can score the specified number of points on your next set of 10 throws”. Specific items consisted of 7 progressively harder self-efficacy statements (or collective efficacy statements), which asked individuals their confidence in their own (or their group’s) ability to improve their previous score in incremental fashion. Each item began at 0% (i.e., scoring equal to their practice trial) and ranged upward to 100% (i.e., doubling their initial score). The actual number of points required for each level of performance was written onto the response sheet by the participants themselves prior to making their ratings. Responses to each of the seven difficulty levels were scored on an 11-point scale, from 0 (*not confident*) to 10 (*very confident*), and the seven ratings for self-efficacy and collective efficacy were then aggregated separately to produce a self-efficacy score and a collective efficacy score.

Table 3.2

Self-efficacy and collective efficacy ratings

Please rate your confidence that YOU AS AN INDIVIDUAL can score the specified number of points on your next set of 10 throws:

For example, if you have complete confidence that you can score equal to practice round, you could circle 10. However, if you are not confident that you could increase your points 40% more than the practice round, you would circle a number closer to the zero end of the scale.

	<i>Not Confident</i>	<i>Very Confident</i>
1. Equal to practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
2. 10% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
3. 20% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
4. 40% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
5. 60% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
6. 80% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
7. 100% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	

Please rate your confidence that YOUR TEAM AS A WHOLE can score the specified number of points on your next set of throws:

	<i>Not Confident</i>	<i>Very Confident</i>
1. Equal to practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
2. 10% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
3. 20% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
4. 40% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
5. 60% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
6. 80% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	
7. 100% more than practice round (_____)	0 1 2 3 4 5 6 7 8 9 10	

3.2.4 *Dart Throwing Performance*

Equipment. The equipment consisted of paper dart targets, butcher paper, steel tip darts, and a cork board. The cork board was placed on the floor and covered with a white butcher paper. A paper dart target was placed in the centre of the butcher paper. The target was 288mm in diameter with 6 concentric circles having the following radii: 18 mm (6 points: bull's-eye); 32 mm (5 points); 68 mm (4 points); 94 mm (3 points); 120 mm (2 points); 144 mm (1 point). Based on pilot testing, a distance of two metres between the performer and the target was chosen. This distance was found to represent a “moderate” difficulty level during pilot testing.

Scoring. For data analysis purposes, the distance (in millimetres) between where each dart landed and the centre of the bull's-eye was measured to determine performance errors. However, during testing, participants were given performance feedback based on point scores associated with the circles on the target (i.e., from 0 up to 6 points). These point values were displayed on the targets and were clearly visible to the participants. Darts landing in the smallest circle in the centre of the board (bull's-eye) received 6 points, and points decreased in one-point increments for circles further away from the bull's-eye. Darts landing outside of the largest circle were awarded 0 points. Points were summed for each individual after they completed their throws, and team totals were then calculated by summing the individual totals.

3.3 Procedures

Prior to involvement in the experimental phase of the study, participants completed the INDCOL questionnaire in order to assess their levels of individualism-collectivism. For the purpose of determining each person's relative levels of individualism-collectivism, a ratio between the two scores was computed. Using a median split on the 'ratio' scores, participants were allocated to “individualist” or “collectivist” orientation groups. Within each orientation group, there were 12 “teams” of 3 or 4 randomly-allocated participants. Each team was required to report to a university laboratory for one hour to undertake the experimental phase of the study. Upon arrival at the lab, participants read an information sheet explaining the study and signed an informed consent form. Next, the researcher obtained demographic information (e.g., age, gender, dominant hand, and prior involvement in sport and exercise activities). The team was then randomly assigned to one

of three self-talk conditions: (a) Individual-centred self-talk, (b) Group-centred self-talk, or (c) Control (neutral self-talk). All participants were given brief instructions about correct dart throwing technique and the scoring system that would be calculated as a team whole not an individual performer. They were also told to aim for the centre of the target (the bull's eye) and instructed to use their non-dominant hand at all times. Use of the non-dominant hand served to increase the novelty of the task and to reduce the influence of prior practice on performance.

Each of the team members was then given an opportunity to practice the dart-throwing task in turn, while the others were taken to the waiting area. During the practice session, each participant performed a set of 10 throws alone in the presence of only the researcher. The absence of team-mates was intended to eliminate the influence of vicarious experience on subsequent personal and team efficacy ratings. The points for each throw were recorded, and a practice-round total was determined for each person. The team's practice-round total was also calculated but was not made known to participants at this time. After completing their practice throws, each participant was given a written copy of their randomly-assigned self-talk script. Using a microphone and wearing a set of noise-cancelling headphones, they recorded their statements on a desktop computer.

When all team members had completed their practice throws and made their recording, participants came back to the lab together and sat in front of the computer containing their recording. They then listened to their self-talk script for a period of two and a half minutes.

After listening to their self-talk script, individual and team points from the practice trial were announced and written on a white-board. Participants were then asked to complete the self-efficacy and collective efficacy scales, using their individual and team point totals from the practice round as a basis for their ratings. After making these ratings, each participant made 10 "real" throws in the presence of other team members. While throwing the darts, participants wore a set of headphones and listened to their self-talk script. Following each participant's performance, the scores achieved were announced and the running-total for the team was amended accordingly. To emphasise the team-oriented nature of the activity, each thrower retrieved their own darts from the target and handed them to the next performer. Verbal encouragement among team members was also permitted. At the end of the experiment, the participants were debriefed and had an opportunity to ask questions.

Chapter 4

Results

4.1 Descriptive statistics

Internal consistencies (Cronbach's alpha) for the efficacy measures were acceptable based on Nunnally's (1978) criteria, with values of .93 and .92 observed for self-efficacy and collective efficacy, respectively. The INDCOL questionnaire was also found to have adequate internal consistency ($\alpha = .81$ and $\alpha = .82$ for collectivism and individualism, respectively).

A check of the data revealed all variables to be normally distributed. Descriptive statistics are presented in Table 4.1 for the sample as a whole and for the three self-talk conditions. One-way analyses of variance (ANOVAs), using self-talk conditions as a between subjects variable, revealed that there were no significant differences in (a) mean performance scores on the practice trial, $F(2, 77) = .01, p = .99$, (b) age, $F(2, 77) = 2.83, p = .07$, (c) mean individualism-collectivism ratio, $F(2, 77) = 1.29, p = .29$, or (d) mean hours of current sport involvement, $F(2, 77) = 0.71, p = .49$, among the three self-talk conditions.

Table 4.1

Descriptive Statistics by Self-talk Conditions

Variables	Group- focused ST	Individual- focused ST	Control	Total
	(<i>n</i> = 27)	(<i>n</i> = 27)	(<i>n</i> = 26)	(<i>n</i> = 80)
	Mean	Mean	Mean	Mean
	(<i>SD</i>)	(<i>SD</i>)	(<i>SD</i>)	(<i>SD</i>)
Age	23.78 (4.92)	21.04 (1.56)	21.92 (5.45)	22.25 (4.41)
Sport Involvement	11.19 (8.40)	15.26 (9.10)	13.77 (10.71)	13.40 (9.47)
Collectivism	105.52 (11.30)	97.96 (13.33)	106.65 (7.33)	105.35 (10.97)
Individualism	98.37 (13.93)	97.96 (13.33)	96.23 (12.65)	97.54 (13.10)
INDCOL Ratio	1.09 (0.16)	1.07 (0.17)	1.13 (0.19)	1.10 (0.17)
Self-efficacy	41.44 (12.10)	38.41 (13.19)	30.74 (12.57)	36.94 (13.26)
Collective Efficacy	44.00 (9.45)	40.67 (11.39)	34.08 (11.90)	39.65 (11.57)
Practice Performance	118.90 (36.31)	120.08 (29.26)	118.84 (31.09)	119.28 (31.94)
Final Performance	87.85 (26.20)	100.04 (28.54)	108.83 (29.22)	98.74 (28.96)
Performance Improvement	31.05 (33.18)	20.04 (33.29)	10.01 (20.95)	20.50 (30.67)

Note: Sport involvement – hours per two weeks of participation in sport and exercise related activities, INDCOL ratio – ratio of collectivism-individualism scores, Performance was measured in terms of absolute error (mm).

Individualist-collectivist orientation grouping. Participants' levels of individualism-collectivism were attained by administering the INDCOL scales. The ratio of the two scores ranged from 0.75 to 1.63, and means and standard deviations are presented in Table 4.1. Twenty participants (25%) reported high levels of collectivism and low levels of individualism, whereas eighteen participants (22.5%) reported high levels of individualism and low levels of collectivism. However, 16 participants (20%) rated high in both individualism and collectivism, and 26 participants (32.5%) rated low in both individualism and collectivism. A median split on the ratio (Median = 1.06) of the scores for individualism and collectivism was used to allocate participants to one of the individualist-collectivist orientation groups. More specifically, 41 participants with a score greater than 1.06 were assigned to a collectivist group, and 39 participants with a score less than 1.06 were assigned to an individualist group.

4.2 Main analyses

4.2.1 Self-efficacy

To examine differences in perceived self-efficacy as a function of individualism-collectivism and self-talk conditions, a 2 (individualism-collectivism levels) X 3 (self-talk levels) between-groups ANOVA was conducted. Results revealed no main effect for individualism-collectivism, $F(1, 74) = .23, p = .63$, and no interaction between individualism-collectivism and self-talk, $F(2, 74) = .33, p = .72$. However, a significant main effect was observed for the type of self-talk used, $F(2, 74) = 5.03, p = .01, \eta_p^2 = .12$. This effect is shown in Figure 4.1. Tukey's HSD post hoc analyses showed that participants in the group-focused self-talk condition ($M = 41.44, SD = 12.10$) reported significantly higher levels of perceived self-efficacy for performance improvement than participants in the control group ($M = 30.73, SD = 12.57$), $p = .01$. Participants using individual-focused self-talk also tended to report higher levels of self-efficacy than those in the control condition ($p = .08$), although this difference did not reach statistical significance at the .05 level. There was no significant difference in self-efficacy expectations between the group-focused self-talk condition and the individual-focused self-talk condition ($M = 38.41, SD = 13.20$), $p = .66$.

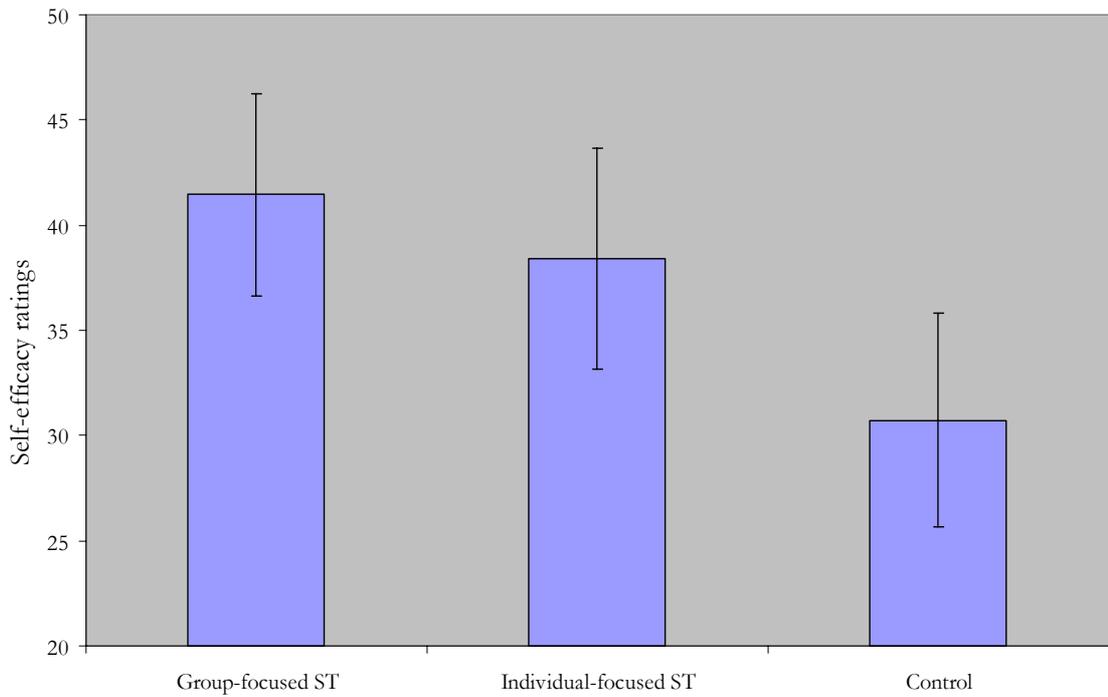


Figure 4.1. Mean levels of self-efficacy by self-talk conditions

4.2.2 Collective efficacy

A 2 (individualism-collectivism levels) X 3 (self-talk levels) between-groups ANOVA was also performed to examine differences in participants' beliefs about their team's ability to improve its overall score, according to (a) their tendency to think in either an individualist or collective way, and/or (b) the type of self-talk used in the experiment. Consistent with the results for self-efficacy, no main effect was found for individualism-collectivism, $F(1, 74) = 2.07, p = .15$, nor was there evidence of an interaction effect $F(2, 74) = .38, p = .69$. However, as expected, the results revealed that there was a significant difference across self-talk intervention groups, $F(2, 74) = 6.17, p = .003, \eta_p^2 = .14$. Specifically, Tukey's HSD post hoc tests showed that participants using group-focused self-talk ($M = 44.00, SD = 9.45$) reported significantly stronger perceptions of collective efficacy than participants in the control condition ($M = 34.00, SD = 11.90$). There was also a tendency for participants using individual-focused self-talk ($M = 40.67, SD = 11.39$) to report higher levels of collective efficacy than participants in a control condition ($p = .08$), although this difference did not reach statistical significance at the $p < .05$ level. No significant difference emerged between the group-centred self-talk condition and the individual-centred self-talk condition, $p = .51$. Figure 4.2 displays the means for collective efficacy within each of the self-talk groups.

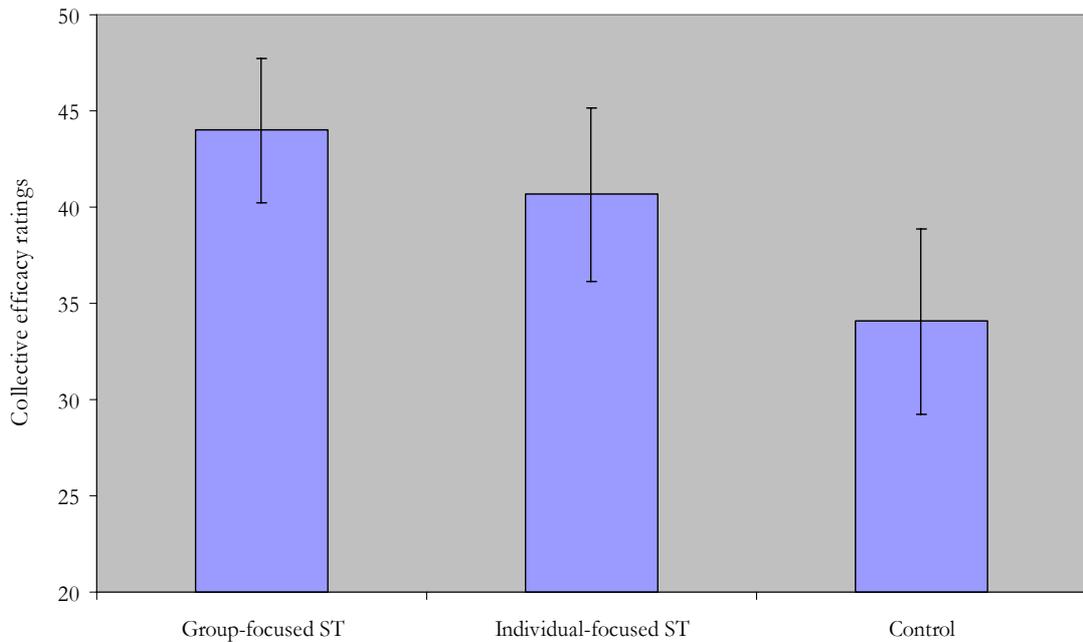


Figure 4.2. Mean levels of collective efficacy by self-talk conditions

4.2.3 Performance

To compare performance improvement across the self-talk and individualism-collectivism factors, a 3 (self-talk intervention levels) x 2 (individualism-collectivism levels) between-groups ANOVA was performed. The results revealed no main effect for individualism-collectivism, $F(1, 74) = .92, p = .34$, and no interaction between self-talk condition and individualism-collectivism, $F(2, 74) = .53, p = .59$. However, a significant difference was found among the self-talk conditions, $F(2, 74) = 3.35, p = .04, \eta_p^2 = .09$ (see Figure 4.3). Tukey's HSD post hoc tests were therefore conducted to compare the means for performance improvement across the self-talk conditions, irrespective of participants' collectivistic and individualistic tendencies. These follow-up tests revealed that the performance improvement of the participants using 'individual-focused' self-talk was not significantly different from that of those using either 'group-focused' self-talk ($p = .37$), or those using 'neutral' statements in the control condition ($p = .45$). However, participants using the group-focused self-talk improved their scores more than those in the control condition, $p = .03$.

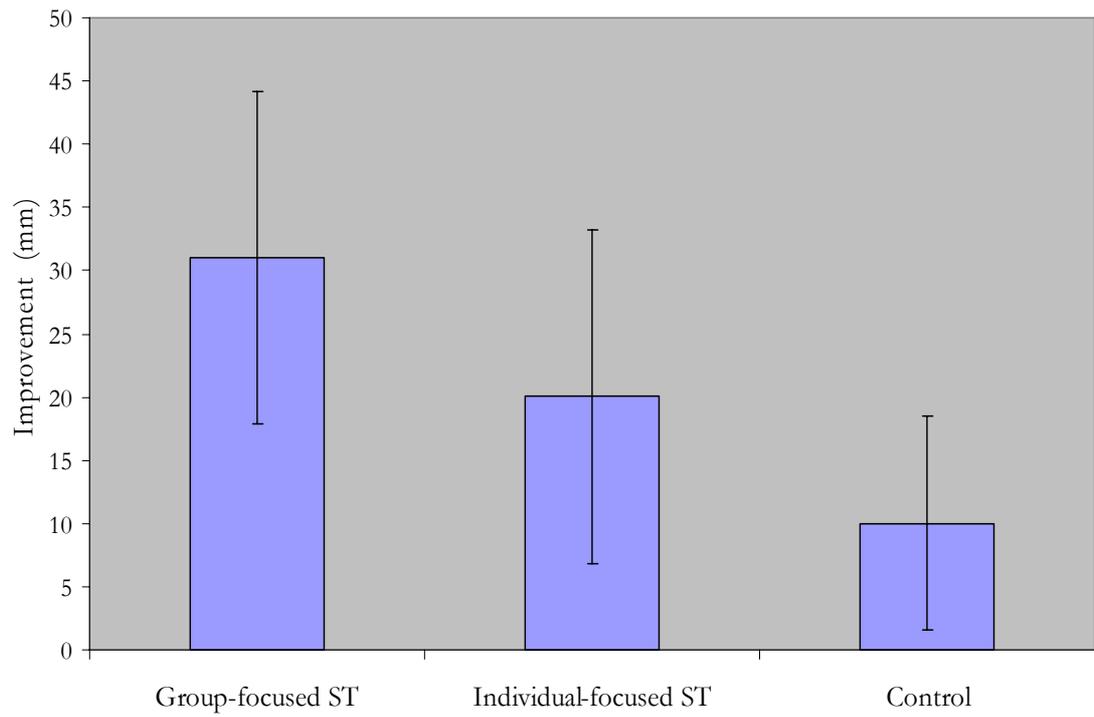


Figure 4.3. Mean performance improvements by self-talk conditions

Chapter 5

Discussion

This primary purpose of this investigation was to examine the impact of different types of self-talk (i.e., group-oriented self-talk, individual-oriented self-talk, or control) upon self-efficacy, collective efficacy, and dart throwing performance in a group context. The possible impact of individualistic or collectivistic orientations was also examined. On the basis of existing theory (e.g., Bandura, 1997; Triandis, 1995) and past research (e.g., Earley, 1994; Hamilton, Scott, & McDougall, 2007; Hardy, 2006; Patchell, 2006; Vargas-Tonsing et al., 2004), it was hypothesised that participants using individual-centred self-talk would report higher levels of self-efficacy than those using group-centred self-talk, and that participants using group-centred self-talk would report higher levels of collective efficacy than those adopting individual-centred self-talk. Moreover, a priori hypotheses stated that performances would be better in both the individual- and group-oriented self-talk conditions than a control condition. Lastly, within the individual-focused self-talk condition, it was predicted that self-efficacy would be higher for individualists in comparison to collectivists. On the other hand, for those using group-oriented self-talk, collective efficacy was predicted to be higher for collectivists in comparison to individualists.

Consistent with Bandura's (1997) theoretical proposals, the overall results of this study revealed that positive self-talk was an effective technique to enhance self-efficacy and collective efficacy perceptions in a group performance setting. As noted by Feltz et al. (2008), relatively little attention has been directed toward examining the effectiveness of self-talk in enhancing efficacy beliefs. Indeed, there are few studies in the sporting domain that have examined the direct relationship of positive self-talk with efficacy perceptions

(Hamel, 1992; Hardy et al., 2005). Bearing this in mind, the present findings not only provide preliminary empirical evidence for the relationship between self-talk and efficacy beliefs but also raise a number of important questions for future research on this topic.

As noted earlier, the present study specifically focused on the impact of differing types of self-talk (i.e., group-oriented versus individual-oriented statements) upon efficacy beliefs, an issue that has been particularly overlooked in the sporting literature to date. Interestingly, contrary to the hypotheses, results revealed that the strongest perceptions of personal efficacy were actually found in the group-centred self-talk intervention condition, with a significant difference from the control condition. However, with respect to collective efficacy, as expected, group-oriented self-talk produced higher levels of collective efficacy in comparison to the other two conditions. Together, these findings suggest that in interdependent contexts, psychological strategies emphasising team capabilities (e.g., group-oriented self-talk) may be particularly effective in enhancing team members' perceptions regarding their own and their team's capabilities.

Although these findings require verification via further investigation, it is possible that the results may be partly due to the group-focused nature of performance. According to Johnston (1967), in team pursuits, a team member is more likely to assess the performance accomplishments of the group as a whole, rather than one's own contributions to the team's performance. Indeed, it is plausible that in group contexts, a team member's beliefs in their personal capability to achieve a certain level of performance may be strongly linked to their beliefs in the team's capability. Accordingly, personal efficacy expectations may be more likely to be influenced by a group-focused psychological strategy. In light of these interesting findings, it is worth noting that the effects of different types of self-talk (i.e., individual versus team) may be determined by the specific performance setting (i.e., individual or group performance attainments). As a result, it would be particularly interesting in future studies to explore the ways in which different task and team components (e.g., the level of interdependence) moderate the influence of self-talk modalities upon both self-efficacy and collective efficacy perceptions.

In addition to the nature of performance, another possible explanation for the significant impact of group-focused self-talk on efficacy beliefs may be related to the relationship between cohesion and cognitive state anxiety. Efficacy theorists (e.g., Feltz et al., 2008)

have suggested that cohesion may act as an antecedent of collective efficacy and indeed, recent studies have shown strong relationships between collective efficacy and team members' perceptions of cohesion (e.g., Heuze et al., 2006; Kozub & McDonnell, 2000; Patchell, 2006). In group contexts, cohesion is viewed as a central element in predicting stable and successful teams, and has been shown to positively influence players' cognitive state anxiety (Carron, Eys, & Burke, 2007). That is, the more united team members feel (i.e., high cohesion), the lower the levels of cognitive anxiety they report (Prapavessis & Carron, 1996). Drawing from this, it is possible that team-focused statements may play a role in fostering stronger group integration (i.e., the degree of an individual's perceptions about the group as a whole), which may in turn result in less anxiety and stronger efficacy perceptions. On the other hand, self-talk statements that emphasise an individual's own contribution (or performance) may result in some degree of separation from the group and consequently raise feelings of anxiety (or fear of failure). Such feelings might be particularly likely if a task is performed in the presence of relatively unfamiliar team members. Again, according to Bandura's (1997) model, this heightened concern may be associated with diminished levels of self-efficacy, at least in comparison to those who are using group-focused self-talk.

With regard to performance, the main finding of this investigation revealed that group-oriented self-talk produced greater performance improvement than neutral statements. At the same time, no significant differences were found between the individual-oriented self-talk and the control condition. Several self-talk researchers have found a positive relationship between self-talk and performance in individual contexts (e.g., Hardy et al., 2005; Hatzigeoriadis et al., 2004; Landin, 1994). However, there is a general paucity of empirical evidence for this relationship in interdependent contexts. In this study, results suggest that different referents used to frame one's self-talk (i.e., "we" versus "I") were responsible for differences in individual performance improvement in team settings. Thus, it is worth noting again that individuals performing within interdependent teams may be most sensitive to psychological strategies that emphasise the team's capabilities as a whole. Further investigation of this issue is encouraged, and it may be useful to do so in a way that examines the differing effects of individual- and team-focussed interventions, across different levels of task interdependence.

With respect to individualism-collectivism, the results of this study did not support the hypothesis that individual differences on this construct would influence the impact of self-

talk upon self-efficacy and collective efficacy beliefs. Prior studies outside the sporting domain have found evidence that the extent to which individuals view themselves as either 'individualistic' or 'collectivistic' may influence self-efficacy or collective efficacy perceptions (e.g., Eden & Aviram, 1993; Goddard & Goddard, 2001; Latham & Budworth, 2006; Oettingen, 1995). However, the present data revealed neither a main effect for individualism-collectivism nor an interaction effect with self-talk, the possible reasons for which are discussed in the section on 'limitations' within this chapter. Bandura contended that, "individualism-collectivism orientations must be treated as multifaceted dynamic influences in explorations of how efficacy beliefs regulate human functioning within independent and interdependent social systems" (1997, p. 32). Bearing this in mind, future study is warranted that uses multidimensional approaches to assess individualist or collectivistic orientations in order to expand our knowledge about the possible relationship between the individualism-collectivism construct and efficacy beliefs.

In previous self-talk research, methodological limitations have been noted with respect to (a) participants tending to use self-determined self-talk, rather than the specific type of self-talk provided for an experiment, and (b) individual between-subject variation in the use of self-talk, such as frequency (e.g., Cumming et al., 2006; Hardy et al., 2005; Hardy, Hall, & Hardy, 2005). In the present investigation, in order to overcome shortcomings found in the previous research and also to ensure standardised delivery of self-talk interventions among participants, a personally-recorded and systematically-used self-talk intervention was employed. In a recent study by Hamilton, Scott, and McDougall (2007), an 'assisted' (i.e., recorded by others) positive self-talk intervention resulted in the greatest performance increase compared to covertly employed self-talk conditions. In discussing their findings, Hamilton et al. (2007) suggested that the assisted self-talk may have been more pronounced if the participants had been directly involved in developing the interventions (i.e., recording their own voice and selecting self-talk phrases). Consistent with Hamilton and colleagues' suggestion, the present findings provide support for the possible advantages of using recorded forms of self-talk. In the future, it would be particularly interesting to explore the potential benefits of using such efficacy-enhancing techniques during practice and during the pre-competition preparation period.

Implications and suggestions for future research

In light of the possible effectiveness and convenience with which these techniques may be implemented, the findings of the present study hold a number of implications for

interdependent sporting activities. First, given that in this study self-talk interventions were shown to be beneficial with newly-formed teams, the present findings suggest that when a coach or consultant is working with an inexperienced team, adopting self-talk statements at the group-level may promote positive efficacy perceptions and enhanced performance. Indeed, by bringing about performance attainments through the self-talk intervention in the early stages of team development, it may be possible to indirectly enhance future efficacy perceptions in a more enduring manner via these mastery experiences.

Second, according to Hardy et al. (2004), athletes involved in team sports as opposed to individual sports are less likely to use self-talk due to a disregard for the effectiveness of self-talk strategies. These trends may be due to the lack of evidence for the relationship between self-talk and performance within interdependent settings. Given the team-based experimental design of this investigation, the present results would provide preliminary evidence for coaches and consultants that employing efficient self-talk strategies may yield better performance. However, given that the use and type of self-talk strategies may vary depending on sport type, gender, and skill level (Hardy et al., 2004), further investigation is clearly warranted regarding the characteristics of those athletes who will benefit from specific types of self-talk.

Third, the present findings may hold practical relevance for those involved in youth sport. Specifically, Chase (1998) found that children's confidence in their abilities tended to largely depend on what they were told by significant others (e.g., parents, teachers, teammates). That is, praise or positive verbal encouragements were an important determinant of their self-efficacy perceptions. Accordingly, Chase (1998) also suggested that young athletes may facilitate their self-efficacy through self-talk, and she encouraged coaches to develop strategies that allow children to monitor their own thoughts in a productive and positive manner. The results of this investigation may provide coaches with an indication of one such strategy in team contexts (i.e., focusing on the group-oriented statements similar to those used in this investigation). It has been previously noted that children are more likely to employ negative self-talk when perceiving more responsibilities (Conroy & Coatsworth, 2007). Team-oriented self-talk strategies could play a role in replacing these negative thoughts with enhanced self-efficacy and collective efficacy perceptions. Additionally, given that a recorded form of affirmative self-talk enhanced listeners' efficacy perceptions, the delivery of self-talk used in this study can be considered to benefit them. At the early stage of implementing a self-talk strategy, this type of assisted

self-talk intervention may help participants in youth sport to employ self-talk by aiding them to develop and implement their own self-talk routines. Bearing these potential advantages in mind, researchers may wish to extend the present protocol to examine the role of these techniques in youth sport contexts.

Limitations

Although the present study makes a number of important theoretical and practical contributions, there are shortcomings that need to be considered when evaluating the current findings. First, and perhaps foremost, in this study, performance at the team level and evidence of shared collective efficacy perceptions were not examined. To extend the present findings, further investigation on team performance and efficacy beliefs at different levels (i.e., individual and team) in highly interdependent contexts (e.g., basketball, soccer, and hockey) should be undertaken.

Second, the teams used in this study were artificially formed by the researcher as part of the experiment, and as a result team members were largely unfamiliar with one another in this study. Drawing from this, the extent to which the current findings generalise to more experienced teams is likely limited. Therefore, a logical follow-up to this study would be to examine the impact of group-oriented and individual-oriented self-talk using teams varying in experience and drawn from real sporting contexts.

Third, this study used methodological strategies to maximise the impact of self-talk on efficacy beliefs. Specifically, in order to minimise the effects of prior experience and vicarious experience, participants were instructed to use their non-dominant hand and to practice the task in the absence of other team members. However, Gould and Weiss (1981) suggested that a lack of previous experience on the task may hamper participants' ability to accurately assess their capabilities. Similarly, Feltz and colleagues (Feltz et al., 2008) noted that "Without some knowledge of the skill to be performed... one cannot make an accurate judgment of one's capability to perform it" (p. 21). Given these observations, it is possible that the effects of self-talk would be reduced in situations where prior performance and vicarious experience were operating more freely.

Fourth, in relation to performance, there are a few minor limitations which would be important to consider in the future studies of this nature. Unlike the practice round,

participants performed the second set of throws in the presence of their team members. This may influence individuals in two ways, including (a) participants may learn techniques through watching others perform, and (b) due to the presence of team members, anxiety may partly influence their performance attainments. With respect to implementing the self-talk interventions in the second set of throws, wearing headphones and listening to the recorded self-talk script could have affected participants' concentration and in turn performance. In addition, ambidextrous participants may have had an advantage in the dart-throwing task used for this study.

Fifth, a final potential limitation of the present investigation involves the rationalisation of individualism/collectivism (i.e. the INDCOL questionnaire). The data showed that 53 participants (i.e., approximately 66%) were either high in both individualistic and collectivistic orientations or low in both orientations. The validity of the INDCOL as the measurement of individualism-collectivism has been supported in several cultures such as America, Singapore, and Korea (Robert et al., 2006; Singelis et al., 1995). However, Tridandis (1995) also noted that the INDCOL may not work as well in other cultures as individualism-collectivism may vary within different contexts. Indeed, Freeman and Bordia (2001) conducted a confirmatory factor analysis of the INDCOL within an Australian university student sample. They found that a unidimensional bipolar model (i.e., individualism versus collectivism) did not adequately fit the Australian data. In other words, Australian university students may not be able to be defined as individualists or collectivists based on their responses on the INDCOL. The authors also suggested that the level of individualism-collectivism was highly specific to the reference-group used in the instrument. Indeed, as noted by Bandura (2002), "people vary in individualistic and collectivistic social orientations depending on whether the reference group is familial, peer, academic, or national" (p. 275). Thus, given that the INDCOL was not specifically developed with interdependent sport settings as the frame of reference, it is likely that a sport-specific measure of this orientation (which has yet to be developed) would have greater capacity for identifying individualists and collectivists in sport performance domains.

Conclusion

The results obtained in the present investigation suggest that group-oriented self-talk is an effective strategy in enhancing self-efficacy, collective efficacy, and individual performance in group contexts. Notwithstanding the limitations outlined above, the findings of this study provide empirical evidence that may be of particular relevance to practitioners and coaches as they seek to reinforce efficacy perceptions and enhance performance within

interdependent sport teams. With respect to the paucity of research implementing self-talk interventions as an efficacy-enhancing technique, these findings offer an innovative direction for future investigations aimed at developing athletes' efficacy perceptions and improving their performance.

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Appendices

Appendix I: Ethics Approval Letter

Appendix II: The INDCOL Questionnaire

Appendix III: Subject Information Sheet and Consent Form