Mental Control and Social Phobia

by

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Abstract

Individuals with social phobia avoid social situations due to their high levels of fear of negative evaluation. Less obviously, they use mental control strategies attempting to keep intrusive thoughts about negative evaluation at bay. This dissertation reports on four studies. The first study examined mental control strategies used by individuals with social phobia in comparison to a control group. It investigated the relationship between mental control strategies and social anxiety symptoms, as well as depression, quality of life, and other indications of mental control. Among the positive associations between measures of fear of negative evaluation and mental control strategies, distraction was more frequently used by individuals with social phobia than other assessed for strategies. The second study involved a Cognitive Behavioural Group Treatment (CBGT) program and examined the changes after treatment in the relationships between social anxiety, mental control strategies, depression, and metacognitions. It found that the uncontrollability/danger metacognition subscale was the only metacognition which shared a relationship with fear of negative evaluation. Furthermore, following CBGT, individuals with social phobia increased their use of social control and reappraisal and demonstrated reductions for punishment and worry mental control strategies; although distraction did not change. For the third and fourth studies, an online thought suppression paradigm was used to measure automatic and strategic processes occurring during attempted suppression of social threat stimuli. Study Three examined the effects of suppressing negative social trait stimuli with a healthy control group, while Study Four compared individuals with social phobia to a control group using the same stimuli as Study Three. These last two studies found that during ‘attempted’ suppression of social threat stimuli, individuals with no psychiatric diagnosis evidenced no suppression of social threat. Yet for individuals with social phobia, at an automatic level of processing, there was indication of vigilance for social threat stimuli. However, during strategic processing
‘successful’ suppression of social threat stimuli occurred. The findings of these four studies are discussed in relation to models of social phobia, treatment implications and the mechanisms and processes associated with mental control.
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Chapter 1: Introduction to the Dissertation

1.1. Background

Imagine for a moment how an individual with social phobia experiences their ‘social fear’ and associated intrusive thoughts. One important element of this experience, which is often described and endured by the sufferer, is a preoccupation with the perception that others are evaluating them negatively. They perceive that others are being critical or "judging" them in some way. Individuals with high levels of social anxiety understand that members of their “social audience” do not necessarily do this openly, but they still experience high levels of self-consciousness and the perception of judgment while in anxiety provoking social situations. Despite understanding that these thoughts are usually inaccurate, they have difficulty knowing how to think more accurately. To confront social situations, the individual with social phobia may attempt to suppress invasive thoughts in order to gain a degree of respite from these distressing and attention-grabbing cognitions.

The present dissertation focuses on mental control strategies, such as thought suppression, that individuals with social phobia use to keep their unwanted thoughts at bay. The next section contains a brief overview of the clinical symptoms pertinent to social phobia.

1.2. Core Symptoms of Social Phobia

The presentation of particular symptoms is necessary to formally diagnose social phobia according to the recognised clinical criteria for the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; Grant & Beck, 2006). This includes four core symptoms: intrusive and negatively biased thoughts, behavioural avoidance, and functional impairment coupled with insight or recognition that one’s fear and avoidance is disproportionate to the social trigger and that this experience is unreasonable. These four symptoms are discussed in more detail below.
Firstly, with regards to DSM-5 conditions necessary for a diagnosis of social phobia, it is stipulated that a “marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others” (Grant & Beck, 2006, p. 202) should be present. Furthermore, the “individual fears that he or she will act in a way or show anxiety symptoms that will be negatively evaluated” (p. 202). Accordingly, biased and irrational cognitions occupy a principal theoretical focal point in the anxiety literature (Beck, Emery, & Greeberg, 1985; Rapee & Heimberg, 1997) and more so in the case of social phobia (see, Hirsch & Clark, 2004). In a recent wide-ranging model detailing the maintenance of social anxiety, Hofmann (2007) hypothesised that the disorder was concomitant on several cognitive factors, including an overestimation of the negative consequences of social interactions, self-appraisal that is not objectively grounded, anticipation of negative social outcomes based on unrealistic social expectations, and dysfunctional cognitive coping strategies. Correspondingly, Hirsch and Clark (2004) demonstrated that individuals with social anxiety misinterpret mildly negative and ambiguous social situations as exceedingly distressing. Additionally, research provides evidence that individuals with social phobia appraise the self with more self-denigration than non-anxious controls (Mansell & Clark, 1999), are hypervigilant to being evaluated by others (Heimberg et al., 1990), and experience significantly more negative than positive thoughts (Beidel, Turner, & Dancu, 1985).

Secondly, the DSM-5 criteria note that “social situations are avoided or endured with intense fear or anxiety” (Grant & Beck, 2006, p. 202). Consequently, the vast majority of self-report questionnaires assess avoidance of social situations (for a review, see Orsillo, 2001), with this symptom representing a central target of many psychological treatments for social phobia (Abramowitz, Dorfan, & Tolin, 2001).

Thirdly the DSM-5 criteria for social phobia state: “the fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important
areas of functioning” (Grant & Beck, 2006, p. 203). The social phobia research literature identifies several disability categories or functional impairments (Eng, Coles, Heimberg, Safren, & Clark, 2005), including deficiencies in social functioning and social support (Schneier et al., 1994; S. M. Turner, Beidel, Dancu, & Keys, 1986), a diminished possibility of establishing long-term relationships with an intimate partner (Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992), dysfunction in educational and occupational performance (Schneier et al., 1994; Stein & Kean, 2000), and more frequent use of psychiatric and social services (Davidson, Hughes, George, & Blazer, 1993).

The fourth DSM-5 criterion for social phobia states that the “fear or anxiety is out of proportion to the actual threat posed by the social situation and to the sociocultural context (Grant & Beck, 2006, p. 203). The presence of these four core symptoms is necessary for clinicians to formally diagnose the presenting problem as social phobia. A prominent and disabling symptom, covered by the first diagnostic criterion reviewed above, is the recurrent and intrusive fear of being evaluated negatively or of acting in a humiliating or embarrassing way. For this reason, an important next step is to examine how intrusive thoughts potentially contribute to and maintain social phobia.

1.3. Intrusive and Negative Thoughts

Intrusive thoughts are unplanned, unwelcome, uninvited, discrete thoughts, images or urges that are ascribed to internal origins and are difficult to manage (Wells & Morrison, 1994). Such unwanted intrusions are experienced by most individuals (Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). For example, in the Salkovskis and Harrison study, 88% of non-clinical participants reported unwanted thoughts. In addition to being common among people with mental health disorders, many individuals with social phobia report intrusive thoughts. As mentioned previously, numerous studies have provided strong evidence that the unwanted intrusive thoughts of people with social phobia most commonly
involve a fear of negative evaluation (FNE). FNE is a core construct in cognitive models of social phobia, and the fear is an important factor leading people with social phobia to behaviourally or cognitively avoid situations that elicit the fear.

1.3.1. **Negative thoughts in social phobia.** Hartman (1983) identified four categories into which the negative self-statements of individuals with social phobia could be grouped: (a) fear of negative evaluation; (b) general social inadequacy; (c) worry concerning the visibility of their anxiety to others; and (d) preoccupation with arousal or performance. Studies have found that individuals with high social anxiety experience significantly more negative self-statements (Cacioppo, Glass, & Merluzzi, 1979; Dodge, Hope, Heimberg, & Becker, 1988). Additionally, people with social phobia indicate high levels of subjective anxiety and negative self-dialogue (Heimberg, 1989; Heimberg, Salzman, Holt, & Blendell, 1993). During an enactment of three separate interpersonal situations, Turner, Beidel and Larkin (1986) found that during these social interactions the individuals with social phobia reported a significantly greater number of negative thoughts and fewer positive thoughts than a control group.

Similarly, Stopa and Clark (1993) found that individuals with social phobia experienced greater frequency of thoughts associated with negative evaluation, a lack of perceived social competence, and a preoccupation with thoughts concerning their appearance. What stands out from the research examining social phobia self-talk is that these individuals evidence a high incidence of negative statements regarding self-evaluation and subjective social anxiety which interferes with the quality of their social interactions.

1.3.2. **Strategies for managing negative thoughts.** As a result of the distress and likely functional interference associated with these intrusive thoughts, it is reasonable to expect that individuals with social phobia frequently practice distraction or other forms of thought suppression. To investigate such it is necessary to have a means to measure the
relative use of mental control strategies. To this end, Wells and Davies (1994) developed the Thought Control Questionnaire (TCQ) as a tool to improve the understanding of mental control strategies used by those attempting to suppress unwanted thoughts. For both clinical and non-clinical participants, the TCQ demonstrates sound validity and reliability. The questionnaire has five separate subscales that identify adaptive and maladaptive mental control strategies. The five factors are labelled reappraisal, social control, punishment, worry and distraction. The “reappraisal” subscale evaluates the way the respondent attends to their thoughts so as to appraise their legitimacy (e.g., “I analyse the thought rationally”). Within the “social control” subscale, individual questions measure the degree to which unwanted thoughts are revealed to other individuals (e.g., “I find out how my friends deal with these thoughts”). In terms of maladaptive strategies, the “punishment” factor items measure the scope with which the individual utilises self-reprimanding comments to keep themselves distracted from unwanted thoughts (e.g., “I shout at myself for having the thought”). The “worry” subscale measures a second maladaptive strategy: the degree to which individuals attempt to distract from intrusive thoughts by deliberating on alternative worrisome thoughts (e.g., “I think about the more minor problems I have”). Finally, the fifth subscale is termed “distraction” and includes items which measure the magnitude of use of behavioural distraction and positive self-talk to distract from uninvited thoughts (e.g., “I occupy myself with work instead”).

On the basis of research examining the validity and reliability of the TCQ, three major conclusions can be drawn. Firstly, two studies utilising the TCQ demonstrated low between-factor correlations, thereby supporting the validity of using the TCQ in identifying participants’ use of the five mental control strategies (Reynolds & Wells, 1999; Wells & Davies, 1994). Secondly, the aforementioned studies reported that the highest subscale correlation was between ‘punishment’ and ‘worry’ (0.43, and 0.27 respectively).
Additionally, these two subscales demonstrated an overall pattern of positive correlations with several measures of emotional vulnerability and psychopathology, thus supporting the hypothesis that the sub-scales measure maladaptive mental control strategies. Specifically, studies examining the association between the five mental control strategies and symptoms have observed that punishment and worry are correlated with increased anxiety and/or depression (e.g. Guthrie & Bryant, 2000; Reynolds & Wells, 1999; Wells & Davies, 1994).

Following on from Wells and Davies’ (1994) research, several studies have explored thought control strategies in individuals with a range of anxiety disorders. Recent research has shown that Obsessive Compulsive Disorder (OCD) patients use the punishment strategy more so than distraction, social control, reappraisal and worry in comparison to the other study participants evidencing anxiety (including social phobia) or depressive disorders (Belloch, Morillo, & Garcia-Soriano, 2009). Research involving the TCQ has also examined mental control strategy use in Post-Traumatic Stress Disorder (PTSD) (Reynolds & Wells, 1999; Warda & Bryant, 1998) and Acute Stress Disorder (Bryant, Moulds, & Guthrie, 2001; Holeva, Tarrier, & Wells, 2001). Two of these studies found that higher use of the punishment and worry strategies were positively associated with PTSD symptoms (Holeva et al., 2001; Warda & Bryant, 1998). For people with Generalised Anxiety Disorder, research has demonstrated higher use of the punishment and worry strategies, and less use of distraction and social control than in a control group (Coles & Heimberg, 2005). On the whole, these studies demonstrate that anxiety disorders are characterised by heightened use of punishment and worry relative to the three other mental control strategies.

Despite research examining the TCQ with the aforementioned anxiety disorders, limited research has been conducted with social phobia, even though cognitive models of social phobia (e.g., Rapee & Heimberg, 1997) propose that individuals with heightened levels of social anxiety have difficulty in disengaging from social threat cues. To the best of this
author’s knowledge, only one published study (Fehm & Hoyer, 2004) to date has examined social phobia and thought control strategies with a reasonably large participant sample (45 individuals). One other study (Tolin, Worhunsky, Brady, & Maltby, 2007) included three individuals diagnosed with social phobia in the sample pool of “anxious control” participants, but three people is arguably too few to support firm conclusions. Fehm and Hoyer (2004) found that individuals with social phobia used the social control strategy significantly less often than OCD participants or a control group. The limited use of social control is understandable as the very nature of social phobia involves limited social interaction, due to their fear of negative evaluation. Interestingly, Fehm and Hoyer make reference to a unpublished manuscript (Abramowitz, Dorfan, et al., 2001) in which the TCQ subscales were compared between individuals with generalised social phobia and a control group. These authors reported that scores on the Beck Depression Inventory were positively correlated with the punishment scale of the TCQ. Additionally, it was reported that there were group differences for four of the five subscales for individuals with social phobia using more worry, punishment, social control, and reappraisal than the control group. In summary, the research to date suggests that worry and punishment strategies are associated with disorders that involve worry, anxiety and obsessional features, but research examining the relationship between the dimensions of the TCQ and clinical measures of social anxiety is lacking. While cognitive models of social phobia imply an association between some mental control strategies and anxious psychopathology, a thorough investigation is needed.

1.3.2.1. Maladaptive versus adaptive mental control strategies. However, before describing a research program to examine the relationship between mental control and anxious symptoms in people with social phobia, it is important to note that not all mental control strategies are maladaptive or dysfunctional in nature. The TCQ purports to identify both functional (social coping and reappraisal) and dysfunctional (worry, punishment and
distraction) thought control strategies. Interestingly, the three dysfunctional approaches (worry, punishment and distraction) can be characterised as thought suppression strategies. They can be identified as suppression strategies because they involve attempting to actively remove unwanted thought from conscious awareness (by thinking of alternative negative or worrying thoughts in the case of the worry mental control strategy). For punishment, individuals engage in self-denigration in their attempt to suppress conscious thought of unwelcome cognitions, and for distraction, they think about something else or engage in behavioural activities. Thus, there is an implicit assumption in the literature that suppression-type strategies of mental control are dysfunctional.

1.3.3. Emotion Regulation and Social Anxiety. Despite this thesis focussing on mental control and suppression of thought, a parallel line of research has been building momentum in the literature: emotion regulation. Although this section is not an extensive review of the literature on emotional regulation in general, what follows is a brief over-view of the literature as it pertains to social anxiety.

Emotion regulation difficulties have been found in the majority of anxiety disorders, with research into the strategies for regulation of anxiety in individuals with social anxiety being in the early stages since Gross (1998a) published his process model of emotion regulation. In terms of the definition of emotion regulation, this involves the processes by which an individual effects the emotion they are experiencing, in addition to how the emotions are experienced and expressed (Gross, 1998a). According to Mennin, Holaway, Fresco, Moore and Heimberg (2007), social phobia is characterised as one in which the individual demonstrates reduced emotionality, emotional hyper-reactivity, and emotion regulation deficits. Mennin and colleagues found that undergraduates with clinical levels of social phobia demonstrated high levels of emotional intensity that was significantly correlated with their social anxiety far more than individuals with generalised anxiety.
disorder and major depressive disorder. A further study by Turk, Heimberg, Luterek, Mennin and Fresco (2005), found that individuals with heightened levels of social anxiety symptoms reported experiencing greater difficulty describing their emotions and being less focused on their emotions than individuals with generalised anxiety disorder or a control group. More recent research has demonstrated that in comparison to a control group, individuals with social anxiety demonstrated more use of emotional suppression and significantly more ambivalence about expressing their emotions (Spokas, Luterek, & Heimberg, 2009). Thus, based on this brief overview of emotion suppression, individuals demonstrating heightened levels of social anxiety appear to demonstrate difficulties controlling emotion.

1.4. Models Of Social Phobia

Turning attention to contemporary models and theories of social phobia, it is argued that unwanted negative thoughts and the struggle in controlling them play an important part in the maintenance of the disorder. Many theories of social anxiety and social phobia exist, but what follows is a selective review of three significant and illustrative theories: Clark and Wells’ cognitive model of social phobia (Clark & Wells, 1995), Rapee and Heimberg’s cognitive-behavioural model of anxiety in social phobia (Rapee & Heimberg, 1997), and Gilbert and Trower’s evolutionary process model in social anxiety (Gilbert & Trower, 2001). The first two were selected as typical of cognitive-behavioural models and the final theory, because it makes contrasting predictions about the value of mental control.

1.4.1. Clark and Wells’ cognitive model of social phobia (1995). Clark and Wells stated that “the core of social phobia appears to be a strong desire to convey a particularly favourable impression of oneself to others and marked insecurity about one’s ability to do so” (p. 69). They hypothesised that an individual’s past negative social experiences influence the development of assumptions about the self and their social world. These assumptions
contribute to susceptibility in thinking that the self will be or is in “social danger” during social interactions. When engaging in social situations, these assumptions signify that “(1) they are in danger of behaving in an inept and unacceptable fashion, and (2) that such behaviour will have disastrous consequences for them, in terms of loss of status, loss of worth, and rejection” (p. 69-70). Clark and Wells proposed that this interpretation triggers an “anxiety program that is automatically and reflexively activated” (p. 70). This anxiety program incorporates four factors thought to promote a series of vicious cycles that reinforce the continuation, maintenance and likely intensification of social anxiety. These components are: the perception of behavioural and somatic symptoms as added sources of ‘social danger’; the mixed intrusiveness of somatic responses, negative social evaluative perceptions, and the processing of external social cues; rational and irrational substantiation of the fear in response to an ambiguous or slightly negative responses from other individuals; and engaging in behaviours which ironically exacerbate physiological sensations which the individuals with social phobia fears, such as, “talking quickly is accompanied by hyperventilation and results in further increased heart rate, dizziness, and blurred vision” (p. 70).

Clark and Wells’ (1995) model illustrates three processes that relate to the occurrence of the social situation and contribute to the maintenance of their negative thoughts concerning perceived danger in social situations. The first process is associated with anticipation of the event. Prior to entering a public situation, individuals with social phobia will experience thoughts involving expectations of a poor performance and rejection, recall of previous failures, and deleterious images of themself. At times, the anticipatory anxiety is so pronounced that the individual with social phobia will avoid the situation. When avoidance does not occur, the individual will enter the situation in what has been termed a “self-focused processing mode”, in which Clark and Wells (1995), propose that three different yet overlapping processes occur:
Attention is reallocated from the external to the internal environment (self-focused attention). As a result of this shift in attention, the individual experiences heightened awareness of anxious responses, restricted processing of others’ behaviour and the social situation with amplified physiological arousal, and an image of how they believe they appear to others.

The use of safety behaviours contributes to the reinforcement of negative beliefs and anxiety in several respects. This includes hampering the individual’s engagement in social situations, exacerbating the symptoms that are a direct result of their experienced anxiety symptoms, and the lack of the predicted feared consequence might be ascribed to the use of the safety behaviour, which thus thwarts contesting negative thoughts concerning fear of negative evaluation. The range of safety behaviours includes wearing clothing that minimises sweating (or evidence of), rehearsing sentences in your mind, and imagining being somewhere other than the anxiety-provoking situation. Imagining being somewhere else is an example of the mental control strategy of distraction being utilised by the individual to reduce attention on the anxiety-provoking situation.

The anxiety increases the likelihood of, and indeed induces performance deficits. Decrements in an individual’s performance in social situations at times results in other people responding to such in a negative fashion thereby creating a “self-fulfilling prophecy” that further contributes to the maintenance of the individuals’ fear in social situations. For example, an individual with social phobia in an anxiety-provoking situation is likely to experience reduced and insufficient attention to the social undertaking. This results in a probable poor “social performance”, which is noticed by others in the social situation, thereby increasing the likelihood of detection of ‘social threat’. When the individuals’ contemporaries observe the reduction in social
performance, this contributes to the individual’s maintenance and continued fear of future social encounters (a self-fulfilling prophecy).

In terms of mental control, as hypothesised within the Clarks and Wells model (1995), what is customarily described as an attentional bias for social threat stimuli in the literature could be more accurately described as being engrossed and worried about thoughts which relate to negative self-evaluation. Based on unpublished research (Mennin et al., 2007, cited in Clark & Wells, 1995) high social anxiety may be associated with an attentional bias away from negative social cues. That is, Clark and Wells postulate that “anxious individuals show an initial attentional bias toward negative real-life social threat cues followed by avoidance” (p. 84) which is consistent with earlier research (Williams, Watts, MacLeod, & Mathews, 1988). Within this model of social anxiety, there is both uncertainty and ambiguity as to whether individuals have difficulty in disengaging from social threat or rather engage in avoidance of these stimuli after an initial attentional bias. Further research is necessary to answer this question.

In addition to anticipatory anxiety and actual confrontation of social situations which involves the self-focused processing mode, Clark and Wells’ (1995) detailed a process that follows the social event in which reprocessing of the experience occurs. The individual with social phobia performs a “post-mortem” of the previously encountered social situation, during which this review of events is overshadowed by overestimation of negative occurrences and shame. Consequently, this post-event processing further adds to the individuals’ internal record of perceived and actual social disappointments, thereby maintaining their perception of social incompetence.

1.4.2. Rapee and Heimberg’s cognitive behavioural model of anxiety in social phobia (1997). Rapee and Heimberg (1997) proposed a model of social phobia which differs
from Clark and Wells’ (1995) model, in that attention is directed toward an image of how one is viewed by others as well as to threat-related cues in the external environment.

Additionally, Rapee and Heimberg clarified that the processes detailed in their model, which they hypothesised contributed to the maintenance of social anxiety, “are essentially similar regardless of whether a social/evaluative situation is actually encountered, is anticipated, or is retrospectively digested (brooded over)” (p. 742). In their model, individuals with social phobia develop a schema comprised of a mental representation of their external behaviour and appearance as observed by others in a social situation. This mental representation is based on a variety of stimuli, including information obtained from external and internal cues and long-term memory. Following the elaboration of this mental representation, attentional focus is directed at these perceived negative aspects of the self.

Rapee and Heimberg (1997) hypothesised that when an individual with social phobia enters an anxiety-provoking situation with a perceived (tangible or imagined) audience, the consequences include:

- Shifting of attentional resources inward to the self, so as to construct a mental representation of the audience’s perception of the socially anxious person. This mental representation is based on previously gathered information about the self, both accurate and inaccurate. This internal representation includes both information from long-term memory (e.g., past social experiences) and current physiological sensations (e.g., heart palpitations or sweating).

- Apportioning of attentional resources externally to identify negative cues from the audience. As a result of allocating high attentional resources to the detection of internal and external threats the individual with social phobia is involved in a “multiple task paradigm” (p. 746). Consequently, “individuals with social phobia will scan their environment for any signs of impending negative evaluation, will detect
such signs rapidly, and will have difficulty disengaging from such” (p. 746).
Considerable focus in the Rapee and Heimberg model is placed on “attentional resource allocation”, such individual’s with social phobia are persistently vigilant to the perception of threat. These authors view this constant hypervigilance for social danger as necessary so as to rapidly detect threat and reduce the likelihood of perceived harm that may result. This difficulty in disengaging from social threat represents an important prediction in the Rapee and Heimberg model for individuals with social phobia who are attempting to engage in mental control of social threat stimuli.

- Appraisal of the likelihood and potential cost of negative evaluation by the audience based on the belief that differences exist between the performance standard expected by the audience and the mental representation of current performance.

- Further anxiety is experienced, based on the belief that negative evaluation is likely to occur. This heightened anxiety compromises the individual’s attentional focus on the task at hand, thereby attenuating their ability to adequately perform social tasks, thereby contributing to the formation of mental representations of the self as ‘accurate’. That is, the fear of negative evaluation is actually/likely occurring.

- Utilisation of subtle avoidance, which observers’ can interpret as demonstration of diminished social skills. As Rapee and Heimberg stated, treatment “would not focus on teaching the ‘hows’ of social skills, but in providing permission and encouragement to abandon comfortable but maladaptive social behaviours” (p. 753). The use of subtle avoidance is associated with diminished interaction with the audience, thereby increasing the amount of negative feedback to the individual.
For social phobia, the anxious cycle is activated when there is inconsistency between the individual with social phobia's discernment of the audience's standard for evaluation of their performance (behaviour and/or appearance) and the appraisal of their performance. This leads to an increase in fear of negative evaluation and further anxiety (Rapee & Heimberg, 1997).

A further point needs to made with regards to the Rapee and Heimberg (1997) model. Heimberg and colleagues (Heimberg, Brozovich, & Rapee, 2010) and Morrison and Heimberg (2013) recently updated and extended their original model to include the “processes by which individuals with SA are affected by their fear of evaluation in social situations” (Morrison & Heimberg, 2013, p. 250). This includes; information processing biases, emotion regulation, safety behaviours, post-event processing and self-focussed attention. In terms of mental control and self-focussed attention, both the previous and updated model suggest that individuals with social phobia engage in heightened attention to social threat stimuli, resulting in further difficulty in uncoupling their attention from their intrusive thoughts. Thus, these authors state that attention for social threat is maintained and that attempts at thwarting and attenuating such attention are ineffective.

1.4.3. Gilbert and Trower's (2001) model. A further model of social anxiety which extends the cognitive behavioural models of Clark and Wells (1995) and Rapee and Heimberg (1997) is that proposed by Gilbert and Trower (2001). Gilbert and Trower’s model of social anxiety is based on both evolutionary concepts and social rank theory (Trower & Gilbert, 1989). Social rank theory proposes the existence of submissive and dominant personalities within society, and that those who are classified as submissive, work to escape rejection by those who are more dominant members (Keltner & Harker, 1998). Individuals deduce their place within the social hierarchy by examining the likelihood and capability of obtaining social approval (i.e., acceptance and admiration) versus fear of negative evaluation.
The non-dominant (lower-ranking) members of the hierarchy are those who have assumed a lower social rank based upon frequent interpretations of inadequacy.

Social anxiety is the principal factor that triggers submissive behaviour in “low social rank” individuals. The essence of a submissive strategy in social anxiety is “damage limitation” which involves information processing automatically priming “submissive defences” (that are highly conserved and originally evolved for dealing with potential or actual social aggression). This raises arousal and increases engagement in submissive behaviours such as eye contact avoidance, inhibitions of thought (thought suppression) and behaviour, and desires to escape (Gilbert & Trower, 2001, p.270). Social rank theory views social anxiety as a protective function, as it promotes acceptance of the lower-ranking individual by the social group. It is further hypothesised that to strengthen both acceptance and survival within groups, the members of the social hierarchy that often perceive themselves as inferior to other members, possess elevated levels of social anxiety. Additionally, those individuals who exhibit lower rank status become more focused on social comparisons, such that they more attentively scrutinise their own as well as others’ behaviour in the company of higher-ranking individuals (Gilbert, 2001). The submissive behaviours utilised by socially anxious individuals are likely to be "maladaptive in many affiliative and relationship-building contexts and contribute to an escalating anxiety cycle" (Gilbert & Trower, 2001, p. 262).

The evolutionary process model of social anxiety introduced by Gilbert and Trower (2001) describes a series of interrelated processes contributing to heightened social anxiety. Process one of the model, “Relationship Classification”, details an individual entering a social relationship (with one or many individuals) in which relationships with others have been pre-ranked as either superior or inferior participants and the likelihood of one’s own status being lost as high. The socially anxious individual has pre-categorised themselves as
inferior in relation to others. Following from this, the second process, “The Dilemma”, involves the individual contemplating the decision to engage in the social situation. Engaging in the situation may involve poor performance and/or negative evaluation from the other individuals, but not participating in the relationship means their social object status does not change, and they may be perceived by others as non-engagers and/or not reaping the benefits of participation. The third process, “The Anxious Self as Unattractive”, involves the magnification of social anxiety and the anxious person seeing the self as unattractive. During the competition for social attractiveness and increasing self-consciousness, the anxious individual begins to generalise social anxiety and the idea of the complete self as unattractive. In the fourth process, “Damage Limitation”, increased self-monitoring of internal and external anxious indications results in the socially anxious individual engaging in damage limitation. This involves increased anxiety and further use of submissive behaviours such as: reducing eye contact and other behaviours, a desire to escape the social situation and engagement in attempts at thought suppression. This leads onto the fifth process, “Internal Attentiveness”, which involves increased self-focused attention upon negative interpretations of efforts at creating positive impressions in the minds of others. Significant attempts of managing multiple cognitive tasks (e.g., managing high levels of anxiety and fear of negative evaluation as well as attempting to effectively communicate with the audience) results in Gilbert and Trowers’ sixth process – “Cognitive Overload”. This particular step in their model is similar to a process mentioned in Rapee and Heimberg’s (1997) model, in which information processing systems reach their limits due to attempts at completing multiple cognitive activities without the necessary cognitive capacity to do so. Following on from this, the anxious individual engages in unrealistic “Cognitive Distortions” (process seven) such as inflating estimations of danger and disqualifying positive outcomes in the social situation. The final step in the model involves the individual strengthening the anxious cycle
by both repeatedly experiencing the symptoms of anxiety and anxiously predicting adverse outcomes and poor performance in subsequent social interactions reinforcing and maintaining the closed loop of social anxiety.

As highlighted in the Gilbert and Trower (2001) model a key component involves “relationship classification” in which individuals with social phobia place themselves in an inferior position relative to others. As a result of the low ranking relationship classification, the socially anxious individual becomes “more focused on what not to do, i.e., damage limitation (e.g., don’t be foolish, don’t show or hide symptoms of anxiety)” (p. 270). Engaging in damage limitation involves attempting to control unwanted and intrusive social threat thoughts which are at odds with the goal of limiting damage to existing social relationships. Gilbert and Trower’s model predicts that by engaging in “inhibitions of thought” (p. 270), the individual with social phobia will frequently attempt to suppress and inhibit thoughts at odds with the goal of minimising their fear of social aggression.

**1.4.4. Contrasts between the models.** Numerous parallels can be found between the models of Rapee and Heimberg (1997), Clark and Wells (1995) and Gilbert and Trower (2001). All models identify environmental influences, inherited predisposition, anticipatory anxiety, and behavioural and somatic changes as maintaining factors for perceived danger, the likely disruption of social skills as a result of heightened anxiety and the resultant impact on others, post-event processing and lastly the contribution of cognitions in the maintenance of anxiety in social phobia. In terms of invasive cognitions, these three models identify fear of negative evaluation and self-focused attention as central maintaining factors for social phobia.

The three models have similarities and differences in terms of fear of negative evaluation. For Rapee and Heimberg, fear of negative evaluation arises from a discrepancy between the individual with social phobia’s beliefs about others’ high expectations of their
personal performance and their own judgements regarding their performance. For Clark and Wells (1995), the fear of negative evaluation is based on the assumption that the audience will form negative views about their actual and perceived anxiety symptoms. The negative evaluative thoughts of the socially anxious individual are not based on what the audience says, but are rather based on an inability to meet self-defined high standards, resulting in the perception of being unacceptable to others (e.g., “I will be rejected and seen as inadequate by others”). As mentioned above, relationship classification is an important process in the Gilbert and Trower (2001) model. Following the automatic placement of the self in an inferior position relative to others, these authors suggested that the “socially anxious believe others do see them negatively — of relatively low rank in regard to attractiveness, confidence, and competence” (p. 269). Each of these three models of social phobia emphasise the importance of negative evaluative thoughts in the maintenance of the disorder. Despite the importance placed on these invasive thoughts in the models, there are conflicting hypotheses regarding the means by which individuals with social phobia manage their fear of negative evaluation.

Having considered the prominence of unwanted social threat thoughts in these social anxiety models, it is important to address how they represent mental control of thoughts. As discussed in the review of the models of social phobia above, Clark and Wells (1995) stated that individuals with social phobia “become preoccupied with their somatic responses and negative social-evaluative thoughts” (p. 70) yet suggest “An alternative explanation would be that anxious individuals show an initial attentional bias toward negative real-life social threat cues followed by avoidance” (p. 84). Rapee and Heimberg suggested that, “individuals with social phobia will scan the environment for any signs of impending negative evaluation, will detect such signs rapidly, and will have difficulty disengaging attention from them” (p. 746). While Gilbert and Trower postulated that — as a result of the information processing
associated with processes one and two of their model -- the anxious self is 'viewed' as unattractive subsequent to process three. Following processes one through three, process four (damage limitation), “raises arousal and further engagement of submissive behaviours of eye contact avoidance, inhibitions of thought and behaviour, and desires to escape” (p. 270).

As highlighted previously, contemporary cognitive theories and models of social phobia highlight the role of cognitive processes and the allocation of attention (e.g. self-focused attention) in the maintenance of this psychological disorder (Clark & Wells, 1995; Gilbert & Trower, 2001; Rapee & Heimberg, 1997). As Ingram (1990) suggests, self-focused attention is “an awareness of self-referent internally generated information that stands in contrast to an awareness of externally generated information derived through sensory receptors” (p. 156). There is empirical evidence to support the notion that self-focused attention is significantly related to social phobia (Roth & Heimberg, 2001; Woody, Chambless, & Glass, 1997). According to Clark and Wells (1995) and Rapee and Heimberg (1997), the excessive ‘public’ self-focus common to social anxiety, may detract to some degree from the external focus on tasks at hand.

Rapee and Heimberg (1997), Clark and Wells (1995) and Gilbert and Trower (2001) propose that while individuals with social phobia are engaged in high levels of self-focused attention, there is also widespread allocation of attentional resources to the detection of social threat (e.g. signs of diminished interest by their ‘social partner’). Several experimental paradigms such as probe detection tasks (using words and faces as social threat stimuli), Stroop color-naming tasks, eye tracking, face-in-the-crowd detection paradigms and naturalistic role-play (e.g., speaking to an audience) tasks have been used to explore this hypothesised maintaining factor described in these models of social anxiety (see Schultz & Heimberg, 2008).
One of the most extensively used paradigms is the modified Stroop color-naming task. In this paradigm, social-evaluative words (e.g., stupid) are matched with neutral words with no emotional content (e.g., drapes) and presented in various colours, and participants are then prompted to respond by identifying the colour of the word while ignoring its meaning. Significantly longer response times to threatening words as compared to neutral stimuli suggests an attentional bias. Research has demonstrated that individuals with social phobia take longer to name the colour of social threat words compared to neutral words, positive words, physical / health threat words, or depressive themed threat words (e.g., Grant & Beck, 2006; Holle, Neely, & Heimberg, 1997; Mattia, Heimberg, & Hope, 1993; Spector, Pecknold, & Libman, 2003). Additional support for social phobia being associated with attentional biases to socially threatening stimuli comes from research by Garner, Mogg and Bradley (2006) who reported related outcomes when tracking eye movements with a camera. Their results tentatively suggest that persons with social phobia engage in both an initial attentional bias for social threat, yet subsequently engage in avoidance as they then divert their attention away from it. Overall, there is significant evidence that social phobia is associated with attentional biases to socially threatening information although what occurs subsequent to this initial attentional bias is continuing to be debated in the literature.

The three models reviewed previously and the aforementioned discussion of attention biases suggests that individuals with social phobia have difficulty in regulating mental control. It is, however, important to note that it remains uncertain whether the intrusive thoughts encountered by individuals with social phobia are avoided or individuals with social phobia have difficulty disengaging from them. Additionally, these models highlight that less is known about whether the vigilance for social threat occurs at an automatic level of processing, or whether avoidance or conversely greater vigilance for these thoughts occurs at a strategic level of processing. As a result of these current clinical and theoretical quandaries,
closer examination of specific mental control strategies, such as thought suppression and distraction is warranted.

1.5. Thought Suppression

Daniel Wegner (2005) proposed that thought suppression is frequently utilised in an individual’s quest to achieve four overlapping goals: attainment of ‘mental calm’, inhibition of action, or inhibition of emotional expression and thoughts in social settings. The latter two goals tend to occur in social situations so as to keep certain emotions or thoughts concealed from others. By suppressing specific thoughts from conscious attention, it is expected that these internal stimuli will be hidden from others in the social interaction. Prior to discussing a general theory of mental control which details both automatic and strategic processes, it is important to briefly mention an influential series of studies by Daniel Wegner and colleagues (Wegner, Schneider, Carter, & White, 1987). Wegner and colleagues first study involved half of the subjects being instructed to “try not to think of a white bear” for five minutes, followed by ‘thinking’ of it in the following five minutes (“initial suppression” condition). The other participants received these instructions in reverse order (“initial expression” condition). During this period in which participants were attempting to not think of white bears, they were instructed to ring a bell each time the thought of a white bear came to mind. The results demonstrated that subjects who had initially suppressed thoughts of a white bear had significantly more frequent thoughts of the white bear during the expressive period. Additionally, this result suggested that attempting to suppress ones’ thoughts may result in individuals becoming more fixated with the unwanted thoughts following the termination of suppression (“rebound effect”). A second study was conducted in which a further condition was added (“focused distraction”) to the aforementioned initial expression and suppression conditions. This involved study participants being instructed to think of a red Volkswagen whenever they thought of a ‘white bear’. The result from study one was replicated in study
two with the additional finding that participants in the focused distraction condition demonstrated a significant reduction in the rebound effect in comparison to the other two conditions by focusing their attention on a specific distractor. That is, the first study involved “general distraction”, since no specific instructions were provided to participants on how not to think of white bears. For the second study, participants were asked to focus their attention on one specific distractor (a red Volkswagen). The results from these two studies indicate that the consequences of thought suppression change based on whether individuals attempt to use general or specific distraction techniques to quell the occurrence of unwanted thoughts.

1.5.1. Wegner’s ironic process theory. The phenomenon of increased intrusive thoughts following suppression demonstrated in Wegner and colleague’s (1987) studies required an explanation. Wegner and colleagues advanced the Ironic Processes Theory of mental control (Wegner, 1994; Wegner & Erber, 1992) to explain thought suppression. They proposed two mechanisms to account for the attempts at self-controlling mental states: the first “operating process” is a conscious, effortful process, which searches for mental states that are consistent with the preferred state: the second “monitoring process” involves the action of an unconscious, automatic process which seeks out mental states that are conflicting with the desired state so as to assess whether the operating process is required. That is, the monitoring process is vigilant for the occurrence of the “target thought”, so as to notify the operating process that further stimuli used for distraction are necessary. Ironically, the monitoring process maintains activation of the unwanted thought, such that actual occurrences of the unwanted thought in conscious awareness (thus signifying a failure of maintaining or achieving the preferred mental state) are detected and conveyed to the operating process. As a result of strategic and conscious activity the operating process consumes finite processing capacity, and as Wegner (1994) stated, “Anything that distracts the person’s attention from the task of mental control will undermine the operating process.
and so enhance the effect of the monitoring process” (p. 40). However, the automatic and unconscious monitoring process continues to work even if the general processing capacity has been weakened. When processing has not reached capacity, the operating process is more efficient than the monitoring process, thereby resulting in effective suppression of target thoughts. Yet, when the individual willingly stops thought suppression efforts (and the operating process ceases), the monitoring process continues to function, thereby keeping the target thoughts active and available for processing. The continued accessibility of the target thoughts results in the rebound effect — an increased occurrence of the formerly suppressed thoughts (Wegner, 1994).

As mentioned previously, Ironic Process Theory holds that thought suppression results in a post-suppression increase in the target thoughts under two circumstances: when the individual abandons suppression attempts, and during instances of mental load increase. Wegner also proposed that following suppression attempts, an increase in the previously suppressed target thoughts can be detrimental. For instance, a post-suppression increase in to-be-suppressed thoughts may contribute to an increase in anxiety or stress (increased mental load), thereby further reducing the processing capacity of the conscious operating process, which in turn is hypothesised to further reduce suppression efficacy. Take, for example, a young man who is attempting to suppress the thoughts regarding a previous social outing with his date going wrong. In order to banish this thought, he may attempt to focus on an upcoming positive event with his best friend. Alternatively, he could resume searching for his next potential date on the internet dating site he frequents. In order to distract himself from the “date gone wrong” thought, his search for distraction is a conscious and effortful process. This search for distracting thoughts involves attempting to find the most efficacious one that diverts his attention and occupies his thoughts. Unfortunately, thoughts concerning the failed date will likely return automatically, outside of conscious attention or effort. The
manifestation of the intrusive thought in conscious awareness triggers the launch of the strategic search for distractors. This process is ironic in that the unconscious automatic identification of the intrusion, probably accounts for the failure of the strategic search for distractors. This automatic monitor’s detection of the ‘intrusion’ increases conscious awareness to unwanted thoughts, thereby intensifying vigilance to similar themes, and re-introduces the intrusive thought to conscious awareness. Thus, the thought of the dating incident could prompt the young man to remember wanting to be in a relationship, to find his soul-mate, and re-trigger the attempted suppressed thought of the date gone wrong.

As highlighted in the above example, two processes work in tandem during attempted suppression of an intrusive thought: an unconscious and automatic monitor and a conscious and strategic operator process. In order to better understand these processes outside of self-reported thought frequency methods (e.g. Wegner et al., 1987), which are limited in their ability to explore the automatic monitoring process, further research was necessary. Wegner and Erber (1992) extended the study of thought suppression beyond self-report methodology. In the first of two studies, participants were asked to either suppress or concentrate on a word from a specific category for five minutes. After this period, participants were to continue suppressing or concentrating on the word, in addition to completing a further task. This involved listening to a list of 10 words that were either related or unrelated to the thought participants were suppressing or concentrating on. Participants were asked to generate a word associated with each of the 10 words. Importantly, participants were instructed to either deliver the individual “associate word” in three seconds (high-pressure condition) or 10 seconds (low-pressure condition). Under the high pressure condition, subjects delivered the target word in response to target-related prompts significantly more frequently during suppression than during the concentration condition. This result lends support to the hyperaccessibility hypothesis, “that suppression under cognitive load yields yet greater levels
of accessibility [than intentional concentration] and constitutes evidence for a higher degree of access — hyperaccess” (Wegner & Erber, 1992). This result is important, as with social phobia, attempted suppression of unwanted thoughts would correspondingly occur under heightened cognitive load in the form of elevated levels of anxiety.

1.5.1.1. Measuring the processes associated with thought suppression. So as to better understand the thought suppression mechanism and test their theory that it involved strategic as well as automatic processes, Wegner and Erber (1992) used the Stroop (1935) colour-word interference paradigm in their second study. The Stroop task requires participants to identify the colour in which word stimuli are presented and to respond as quickly as possible. Wegner and Erber asked study participants to suppress a target word (e.g., mountain) at the same time they completed a Stroop task. Word stimuli presented in this task were either a neutral word, the target word (i.e., the to-be-suppressed stimulus), or related to the to-be-suppressed word (e.g., slope). Greater naming latencies to the presented word are taken to signify that the meaning of the word is more accessible because the word’s meaning interferes with the colour-naming (Wegner & Erber, 1992). Participants were either in the high (remember a nine-digit number) or low cognitive load condition (retain a one-digit number in memory). It was hypothesised that the automatic target search initiated by suppression works to make an individual attempting suppression hypersensitive to word stimuli that potentially bring the target thought to consciousness. Among participants who were asked to suppress, those in the high load condition, recorded longer response times when naming the colour of the target word than subjects in the low cognitive load condition. This result can be interpreted to mean that those in the high load condition demonstrated that the automatic target search identified the intrusion (the target words), but the “controlled distractor search” was not triggered. This further suggests that under low cognitive load, the controlled distractor search would have sought out words other than the to-be-suppressed
stimuli, but with high cognitive load this was not possible. Expanding on this observation, during the period in which the automatic target search is unaided by the controlled distractor search, to-be-suppressed words become primed or hyperaccessible, steering study participants to attend to the stimuli for longer periods (Wegner & Erber, 1992).

Wegner and Erber’s (1992) two studies provide support for some of the processes associated with ironic process theory by demonstrating that the paradoxical effect of suppression is evidenced by cognitive hyperaccessibility. Despite their research not being solely based on self-reported thought frequency dependent variables, a critical element presumed to be functioning during suppression is missing from their methodology. As Wegner (1994) stated:

“If the monitor finds indication of control failure, it reinstates the operating process. Because the monitor stays watchful of lapses, in control, however, it keeps the mind sensitive to the mental conditions that indicate that intentional mental control is failing.” (p. 35).

Thus, for adequate and accurate examination of the operator and monitor during thought suppression attempts, it is important to manipulate failures in suppression.

As a result of the aforementioned difficulties associated with Wegner and Erber’s (1992) methodology, a more recent series of studies clearly addresses these inadequacies and endorses the existence of the operating and monitoring processes. In a series of three studies by Page, Locke, and Trio (2005), individuals from a university sample were asked to either suppress or concentrate on a specific word category (e.g., fruit), then verbally identify a subsequently presented word. Shorter response times indicated hyperaccessibility for the specific word that was being verbally responded to. Words to-be-identified were displayed on a computer screen and were categorised as either from the to-be-suppressed category (e.g., cherry) or neutral (i.e., words that did not fit in the to-be-suppressed category). Prior to
words being presented on the computer screen, subjects were presented with an intrusion, in which the presentation time was short enough to only allow this word to be unconsciously attended to (by the monitor). This briefly presented word was considered an intrusion as it was from the to-be-suppressed category and unconsciously signalled to the participant that a failure to suppress the target word had occurred. Importantly, the time between the onset of the intrusion and the subsequent presentation of verbally identified target words (stimulus onset asynchrony — SOA) was manipulated. This SOA, was either short (150 milliseconds) to allow for only automatic processes to occur (the monitor) or long (2,000 ms), to permit strategic processes (the operator) to ensue.

Different sets of word stimuli were used in Page and colleagues (2005) studies, with study one utilising positive and negative affective stimuli, and study two using two categories of words that are not polar opposites of each other (e.g., ‘fruit’ and ‘sport’). The third study was similar to the first in terms of the word stimuli employed, but intrusions were not presented to participants. It was hypothesised that presentation at the short SOA would result in accessing of the ‘monitor’ (thereby searching for “suppression failures”), and increasing accessibility and speed of reaction times when the word was from the fruit category. For the longer SOA, the monitor would have identified the intrusion as a suppression failure and triggered the operator to search for alternative replacement thoughts, resulting in the detection of fruit-related stimuli at a longer reaction time. In the first two studies results were consistent with ironic process theory, whether polar opposite stimuli or stimuli from different categories were used. When study participants who were attempting to suppress stimuli were shown a briefly presented word from the same category they were trying to suppress (the ‘intrusion’), they demonstrated activation of this same material at a short SOA. This result is consistent with the monitoring process identifying to-be-suppressed stimuli. Additionally, word stimuli from a different category were active at the long SOA, demonstrating that the
operator was triggered into looking for distractor stimuli. In the third study, the absence of
the intrusion was associated with a lack of reaction time significance for the to-be-suppressed
stimuli. This result supports a prediction associated with ironic process theory that an
intrusion following the initiation of mental control and the monitoring process is necessary
for activation of the strategic operating process. Based on the results of the Page and
colleagues (2005) on-line thought suppression paradigm demonstrating a robust capability to
investigate cognitive processes involved during thought suppression, use of this method will
likely aid in answering important questions regarding the operation of thought suppression in
social phobia. As detailed earlier with respect to models of social phobia, it remains unclear
whether individuals with this disorder experience difficulties in disengaging from social
threat stimuli or whether such stimuli are too readily suppressed. Additionally, it is important
to understand where such difficulties lie — at the unconscious monitor, conscious operator or
both.

1.5.1.2. The consequence of thought suppression. In terms of the negative
consequences resulting from the attempt to suppress one’s thoughts, the theory of ironic
processes (Wegner, 1994) proposes that the following apply:

* an immediate enhancement effect, whereby an abrupt surge in target thoughts occurs
  subsequent to attempts or instructions to suppress one’s thoughts;

* the rebound effect, in which an increase in target thoughts follows suppression
  attempts;

* hyperaccessibility, where there is augmented priming of the to-be-suppressed
  thoughts as gauged by tasks measuring automatic processing (i.e., the Online Thought
  Suppression Task); and
• a diminished ability to suppress thoughts when an individual’s cognitive resources are overloaded, thereby adversely affecting the operating process and unremitting searching by the monitoring process.

The costs associated with thought suppression, include the immediate enhancement effect and hyperaccessibility of to-be-suppressed thoughts. Thus, the paradoxical increase of thoughts immediately following attempted suppression of such and increased activation of these thoughts despite the desire to rid from conscious attention are contrary to the desired result.

1.5.2. Research examining the effects of thought suppression. Subsequent to the aforementioned studies by Wegner and colleagues (1987), a substantial body of thought suppression literature has been published. Nevertheless, reviews and meta-analyses (Abramowitz, Tolin, & Street, 2001; Magee, Harden, & Teachman, 2012; Purdon, 1999; Rassin, 2005; Wenzlaff & Wegner, 2000) show mixed results. In the meta-analysis performed by Abramowitz and colleagues, it was demonstrated that thought suppression did not lead to an increase in unwanted thoughts (Cohen’s d = 0.07). These researchers then broke their analysis into two separate components, the hypothesised enhancement effect during suppression (“initial enhancement effect”) and the proposed enhancement occurring after suppression attempts (the rebound effect). Small to moderate effect sizes for the rebound effect were discovered in an analysis of 44 thought suppression studies (Cohen’s d = 0.30), but there was a lack of evidence for the initial enhancement effect (Cohen’s d = - 0.35). Some studies detected the rebound effect (e.g., Kelly & Kahn, 1994; Muris, Merckelback, & Horsselenberg, 1996; Wenzlaff & Bates, 2000), but in others the initial enhancement effect was evident (Lavy & van den Hout, 1990; Muris, Merckelbach, van den Hout, & de Jong, 1992; M. L. Turner & Engle, 1989), while other studies found no ironic effects as a result of
suppression (e.g., Brown, Di Nardo, Lehman, & Campbell, 2001; Davies & Clark, 1998; Purdon & Clark, 2001; Roemer & Borkovec, 1994; Rutledge, Hollenberg, & Hancock, 1993).

One factor which may have contributed to the mixed results in the thought suppression literature is the type of thought that one is endeavouring to suppress (Abramowitz, Tolin, et al., 2001; Wenzlaff & Wegner, 2000). Wenzlaff and Wegner suggested that when the target thought is based on emotional material it is more difficult to suppress than neutral thoughts. For example, Davies and Clark (1998) found that whilst watching a film about polar bears did not produce a post-suppression rebound, a distressing film did. In a similar vein, Roemer and Borkovec (1994) demonstrated that study participants who suppressed depressing or anxious material “were less able to clear their minds of the influence of the targets than were subjects with neutral targets” (p. 472). As highlighted by Wenzlaff and Wegner (2000), several variables are likely to be associated with emotional thoughts and effect thought suppression efficacy, including the vividness and concreteness of mental imagery, the perceived personal threat associated with the material, and its uniqueness or its correspondence to the individual’s mood state. In comparison to social threat stimuli, “white bear” thoughts (Wegner et al., 1987) are likely to evoke more detailed mental imagery yet not be perceived as negative. In contrast, in the mind of an individual with social phobia, social threat stimuli are more personally relevant and highly related to the individuals’ current circumstances and mood state.

1.5.2.1. Social phobia and thought suppression. Thought suppression may complicate social phobia as demonstrated by the seeming difficulty sufferers have in disengaging from social threat stimuli (Rapee & Heimberg, 1997). Alternatively, other models of social phobia reviewed earlier in this dissertation, postulate that mental control in social phobia may be better described as one in which the individual is too readily disengaging from social threat stimuli (Clark & Wells, 1995; Gilbert & Trower, 2001). Fehm
and Margraf (2002) examined thought suppression in individuals with social phobia, agoraphobia, and a non-clinical control group. Participants were asked to suppress statements associated with agoraphobia, social anxiety fears and financial difficulties (unrelated to agoraphobic or social anxiety concerns). The principal measure used was the number of times participants pressed a computer mouse to indicate the intrusion of a to-be-suppressed thought during a five-minute period of attempting to suppress one of the three aforementioned statements. This study included two secondary dependent measures: a rating of difficulty in suppressing the thought and the percentage of time thinking of the to-be-suppressed thought during the five minute ‘suppression period’. It was argued that there was a specific deficit in thought suppression among the agoraphobics because these participants demonstrated the most difficulty in suppressing the statement concerning agoraphobic fear, as evidenced by significantly more button presses than the other groups for the agoraphobic statement. In contrast, the individuals with social phobia displayed a generally impaired ability to suppress stimuli, such that both the specific (social anxiety fears) and non-specific statements (agoraphobic and financial concerns) were difficult to suppress. Thus, Fehm and Margraf concluded that people with social phobia may be generally compromised in their ability to suppress agoraphobic, socially anxious and neutral thoughts.

Other research has demonstrated that individuals with heightened levels of social anxiety report more frequent attempts at suppressing thoughts and larger amounts of unwanted thoughts in general (prior to thought control attempts) than individuals with lower social anxiety (Magee & Zinbarg, 2007). The authors also found that highly socially anxious individuals experienced less social anxiety symptoms following suppression attempts than the low socially anxious participants. These results contradict Fehm and Margraf’s (2002) finding that individuals with social phobia demonstrate broad impairment in thought suppression. Magee and Zinbarg asked high and low socially anxious participants to recall a
negative social interaction memory and then complete four “thinking periods”. The first
involved monitoring their thoughts for a negative memory with the second period involving
participants randomly assigned to one of three conditions: suppress the negative social
memory, focus on it, or think freely during which they monitored their thoughts. The third
period involved monitoring their thoughts followed by a social interaction. The final thinking
period involved monitoring their thoughts. Magee and Zinbarg found that both focusing and
thought suppression contributed to a larger increase during the first monitoring period and
consequent fall in undesirable word stimuli (in the final monitoring period) than for the think
freely condition for both the low and high social anxiety research participants. Magee and
Zinbarg proposed that their results did not support Fehm and Margraf (2002) who proposed a
general deficit in thought suppression ability or the Wegner and Zanakos (1994a) “self-
loading system”. In contrast, they hypothesised that thought suppression contributes to the
maintenance of social anxiety by increasing the frequency of use of thought suppression, as
opposed to intensifying the occurrence of to-be-suppressed thoughts. As Magee and Zinbarg
stated, their results “provide more support for what we have called a suppression utilization
model than what we have called a suppression enhancement model” (p. 2845-2846).

In addition to the aforementioned studies examining thought suppression in social
phobia, Cougle, Smits, Lee, Powers, and Telch (2005) demonstrated that anxious thoughts
were suppressed more often and/or more successfully in instances where the social threat
could be anticipated. Socially anxious individuals without a formal diagnosis of social
phobia were randomly allocated to one of four conditions in the study: thought suppression
instructions and an anxious induction (an upcoming impromptu speech), thought suppression
instructions and no anxiety induction, no thought suppression instructions and the anxiety
induction, and no thought suppression and no anxiety induction. All participants were
instructed to monitor their thoughts and report those specific to threat-relevant thoughts. The
findings demonstrated a “reverse rebound” effect, in which thought suppression participants reported fewer anxious thoughts in the period following the anxiety induction than those assigned to the no thought suppression condition.

Cougle and colleague’s (2005) and Magee and Zinbarg’s (2007) results suggest different explanation of thought suppression efficacy to that proposed by Fehm and Margraf (2002). Despite these contrasting explanations for the specific operation of thought suppression in social phobia, these three studies raise interesting questions in the context of Wegner’s (1994) ironic process theory. Could it be that the unconscious monitor is hypervigilant for unwanted thoughts or is deficient in indicating failure in suppression and/or subsequent activation of the conscious operator? Difficulty in suppressing thoughts could just as readily lie in the operator’s struggle to find appropriate distractors such that to-be-suppressed information is kept at bay. In beginning to answer these questions, the challenge is to experimentally manipulate the occurrence of failures to suppress thoughts, so as to begin to understand what occurs subsequently. As hypothesised by Wegner (1994); it is these failures which instigate the processes operating during thought suppression in the first place.

1.6. Cognitive Behavioural Treatment for Social Phobia

Based on the aforementioned discussion, both the intrusive thoughts and the very act of attempting to rid oneself of these thoughts are potentially maladaptive. Yet it remains unclear whether social threat stimuli are difficult to suppress or distraction is too readily used with apparent short-term success in banishing these thoughts. The next logical step is to examine the effectiveness of psychological treatment in assisting individuals with social phobia to more effectively deal with invasive thoughts. To date, six meta-analyses have addressed the psychological treatment of social phobia (Acarturk, Cuijpers, van Straten, & de Graaf, 2009; Chambless & Hope, 1996; Fedoroff & Taylor, 2001; Feske & Chambless, 1995; Gould, Buckminster, Pollack, Otto, & Yap, 1997; Taylor, 1996). These meta-analyses
demonstrate that cognitive-behavioural therapy (CBT), despite variations in the strategies employed in the treatment studies comprising these meta-analyses, demonstrates benefit to individuals who complete treatment. Heimberg and colleagues (1990) initially expounded the application of cognitive behavioural group therapy (CBGT) to individuals with social phobia, with grounding in Beck et al.’s (1985) model of logical analysis and hypothesis testing. The principal component of CBGT is cognitive restructuring incorporated into the within-session role-plays, involving exposure to fearful situations and the assignment of between-session graded exposure homework tasks. As Hope, Heimberg and Bruch (1995) suggested, the “integration of the cognitive and behavioural interventions maximizes access to central cognitions elicited by the anxiety provoking situations and allows social phobics’ irrational thoughts to be challenged with behavioural evidence” (p. 640). These group-based cognitive behavioural interventions for social phobia demonstrate significantly better adaptive clinical effectiveness than a waiting-list control group (Hofmann, Heinrichs, & Moscovitch, 2004; Hope et al., 1995).

Following the development of current models of social phobia and the hypothesised maintaining factors (Clark & Wells, 1995; Gilbert & Trower, 2001; Rapee & Heimberg, 1997), researchers and practitioners of CBGT have begun targeting some of the specific cognitive processes associated with the disorder. These processes consist of: excessively negative perceptions of the self; an overestimation of the cost and likelihood of negative evaluations; an attention bias involving both signs of negative self-appraisal and external interpretations of such, and the utilisation of subtle behavioural strategies that maintain negative self-perceptions. Although experimental evidence supports the inclusion of these cognitive processes in models of social phobia and social anxiety, limited treatment incorporating these factors has been conducted. That said, treatment studies subsequent to the release of recent models of social phobia, often referred to as “enhanced” CBGT, have
produced high effect sizes demonstrating further improvements in treatment (Clark et al., 2006; Clark et al., 2003; Rapee, Gaston, & Abbott, 2009; Stangier, Heidenreich, Peitz, Lauterbach, & Clark, 2003).

As was discussed previously, there is strong evidence that individuals with social phobia engage in high levels of self-focused attention and exhibit an attentional bias for social threat stimuli with some research pointing to support for the vigilance-avoidance hypothesis (see Schultz & Heimberg, 2008). Several cognitive strategies have been progressed which focus on the reduction of self-focused attention. This includes Task Concentration Training (Bogels, 2006) and modification of self-focus attention with a shift to an external focus (Wells, 2007). These therapeutic strategies have been developed to specifically target cognitive and experiential avoidance, which Glick & Orsillo (2011b) report facilitates the relationship between self-focused attention and social anxiety.

As discussed previously, thought suppression strategies (punishment, worry and distraction), also known as avoidant coping strategies, may contribute to the maintenance of social phobia (Fehm & Hoyer, 2004). Engaging in cognitive strategies that result in avoidance of disorder-specific thoughts, such as fear of negative evaluation, is likely to result in lack of habituation to these thoughts contributing to continued elevations in fear and avoidance of social situations (Wells, 2007). Furthermore, there is evidence that thwarting avoidance through exposure to the thoughts that characterise social phobia will lead to attenuation of the symptoms associated with the disorder. Despite most empirically validated CBT treatment packages consisting of a mixture of cognitive restructuring and behavioural exposure (Hofmann, 2007), it is assumed that successful treatment would be associated with decreased avoidant strategies. That said, there is insufficient evidence at present to indicate that efficacious treatment of social phobia is associated with less use of maladaptive and increase use of adaptive mental control strategies.
Surprisingly, almost no research has examined the connection between completion of a CBT program for individuals with social phobia and whether mental control strategies, such as those detailed in the Thought Control Questionnaire (TCQ: Wells and Davies, 1994), adaptively increase and maladaptively decrease following treatment. The only known study, conducted by Bryant, Moulds, and Guthrie (2001), involved individuals with acute stress disorder participating in CBT or supportive counselling. Following completion of the CBT program, participants reported (using the TCQ) significant reductions in worry and punishment and increases in the social control and reappraisal mental control strategies. Examining the specific role of mental control strategies in the treatment of social phobia and whether adaptive shifts occur following treatment may aid in fine-tuning existing cognitive strategies.

1.7. Overview of The Dissertation and Research Rationale

This introduction and review of the literature, highlights our lack of knowledge regarding the specific role that thought suppression, and in particular distraction, plays in the maintenance of social phobia. In addition, the question remains as to whether psychological treatments specifically and adaptively change the mental control strategies utilised by individuals with social phobia following treatment. The research described in this dissertation examined the specific strategies individuals with social phobia use to manage their unwanted and intrusive thoughts. The research also aimed to explore the degree to which individuals with social phobia employ functional over dysfunctional mental control strategies. A further aim was to assess changes in the use of these strategies following completion of CBGT for social phobia. The research was designed to produce outcomes that would contribute to the fine-tuning of existing social phobia treatment programs. The final aim of the current research is to use a paradigm (Online Thought Suppression Paradigm: Page et al., 2005) which allows for examination of the processes hypothesised to occur during
thought suppression. This paradigm allowed for specific analysis of the automatic and strategic processes occurring during suppression of social threat stimuli by individuals with social phobia relative to a control group.

In terms of the format of this PhD dissertation, chapters two, three and four are written from the perspective of a journal article. The reason for this is that chapter four is based on a previously submitted and accepted journal article.
Chapter 2: Study One

2.1. Introduction

The American Psychiatric Association (2006) defined social phobia as a “marked, or intense, fear or anxiety of social situations in which the individual may be scrutinized by others” (p. 203). Social phobia can be debilitating, leading to a history of problematic relationships, a lack of motivation to excel, demoralisation, and drug and/or alcohol abuse. Additionally, socially anxious persons typically fear they will act in a manner that will contribute to people thinking they are inadequate, foolish or that others will clearly see their anxiety. Couched within these cognitive concerns is the fear of being negatively evaluated by others and the worry that they will act in such a way, ironically often leading to such evaluation (Schultz & Heimberg, 2008).

Due to the salience of the dysfunctional thoughts associated with social phobia, researchers are increasingly examining how cognitive processes contribute to the maintenance of the disorder. Cognitive models of social phobia suggest that the disorder is maintained by negative appraisals that occur in social situations (Clark & Wells, 1995; Rapee & Heimberg, 1997). According to these models, individuals with social phobia excessively monitor their anxiety-related sensations, thoughts, and behaviours. This self-focused attention increases negative appraisals of their behaviour while contributing to difficulties in processing external information.

Butler (1985) reported that “patients [diagnosed with social phobia] became aware that they were not fully engaged in the anxiety-provoking activities and spontaneously reported using a kind of internal avoidance” (p.653). This internal avoidance is understandable as individuals with social phobia tend to engage in negative self-evaluative thinking (Alden & Wallace, 1995). They also ruminate about what others think of them (McEvoy & Kingsep, 2006) and about the impression they perceive they are making (Melchior & Cheek, 1990).
Additionally, individuals with this disorder are focused on external threat cues and simultaneously engage in high levels of self-focused attention (Schultz & Heimberg, 2008), thereby contributing to high levels of focus on the perception of social threat. Consequently, attempts to control the unwanted cognitive activity may play an important role in the maintenance of these thoughts and the disorder itself.

Research has demonstrated that individuals with heightened levels of social anxiety report greater amounts of thought suppression and larger amounts of unwanted thoughts than individuals with lower social anxiety (Magee & Zinbarg, 2007). For example, Cougle, Smits, Lee, Powers and Telch (2005) demonstrated that students with high social anxiety successfully suppressed or avoided anxious thoughts during conditions of heightened anticipatory anxiety. Likewise, Kingsep and Page (2010) found that individuals without a psychological disorder did not suppress social threat stimuli, yet individuals with social phobia successfully suppressed this information. Together, these findings emphasise the potential role of thought avoidance in the maintenance of social phobia.

Researchers examining thought suppression and mental control have used various questionnaire measures to study thought suppression. The most extensively used tool is the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994a). The WBSI is a self-report measure of individuals’ general propensity to suppress intrusive and unwanted negative thoughts. Although the WBSI measures the degree to which individuals can ignore their unwanted thoughts, it does not identify specific strategies that are used to suppress these thoughts. Rassin (2005) suggested the importance of discriminating between the end product of thought suppression and the specific strategy used to reach this goal.

One means of identifying strategies that individuals use to manage thoughts is the Thought Control Questionnaire (TCQ), devised by Wells and Davies (1994). The TCQ assesses five general strategies individuals utilise in their attempts to keep unwanted and
displeasing thoughts at bay. These are “Punishment” (anger directed at self in the form of criticising or pinching oneself to control thoughts), “Reappraisal” (attempts at generating alternative ways of interpreting the thought), “Social Coping” (engaging friends in an attempt to better deal with their own thoughts), “Worry” (focusing and dwelling on other negative concerns), and “Distraction” (diverting ones’ attention by engaging in an activity or thinking about another belief).

Research with the TCQ has found that thought control strategies are correlated with emotional vulnerability and psychopathology, yet not all strategies are maladaptive or dysfunctional. McKay and Greisberg’s (2002) demonstrated functional (social coping and reappraisal) and dysfunctional (worry, punishment and distraction) thought control strategies. This distinction is important as three of the TCQ’s approaches (worry, punishment and distraction) can be understood to be suppression strategies, because they involve attempting to cognitively avoid the unwanted thought. The other two strategies (reappraisal and social coping) do not appear to involve thought suppression. During use of reappraisal, the individual engages in cognitive therapy approaches such as disputation and examination of the evidence surrounding the intrusive thought, while social coping involves the individual sharing and discussing the unwanted thought with other individuals.

Existing evidence suggests that worry and punishment control strategies comprise the dysfunctional category based on them being positively associated with several measures of psychopathology (e.g. Abramowitz, Whiteside, Kalsy, & Tolin, 2003; Fehm & Hoyer, 2004; Wells & Davies, 1994). Whilst McKay and Greisberg suggested distraction should be classified as a dysfunctional thought control strategy, other researchers have identified this as a functional mental control strategy (N. Amir, Cashman, & Foa, 1997; Wells & Davies, 1994). Wegner, Schneider, Carter and White (1987) hypothesised that distraction, or more precisely, unfocused distraction, is the agent behind the proposed paradoxical effects of
thought suppression. These differing accounts as to whether distraction represents a functional or dysfunctional mental control strategy call for further investigation.

Despite the importance of cognitive presence during exposure to anxiety-provoking situations, surprisingly little research has directly examined the means by which individuals with social phobia control their thoughts. In contrast, research into the association between thought control strategies and anxiety continue to mount. Following Wells and Davies’ (1994) pioneering work, Amir and colleagues (N. Amir et al., 1997) compared the TCQ scores of Obsessive Compulsive Disorder (OCD) patients and healthy controls. OCD patients used all strategies (except for distraction) more frequently than controls. Much subsequent research has been conducted on OCD (Abramowitz et al., 2003; Belloch et al., 2009; Rassin & Diepstraten, 2003; Tolin et al., 2007) and additional research has focused on Post-Traumatic Stress Disorder (PTSD) (Reynolds & Wells, 1999; Warda & Bryant, 1998), Acute Stress Disorder (Bryant et al., 2001; Holeva et al., 2001), and Generalised Anxiety Disorder (Coles & Heimberg, 2005). Together these studies demonstrate that anxiety disorders are characterised by heightened use of punishment and worry thought control strategies.

Very little research into social phobia has been conducted with the TCQ. One recent study included three individuals with social phobia within a sub-sample of anxious control participants (Tolin et al., 2007) – too few for meaningful comparisons. Only one other known study has examined social phobia and thought control strategies. Fehm and Hoyer (2004) found that individuals with social phobia used the social control strategy significantly less often than OCD participants and their control group. Unfortunately, these researchers did not specifically examine the relationship between thought control strategies and social-anxiety-specific measures of psychopathology.
In order to better understand the differential use of thought control strategies among clinical populations, some researchers have sought to understand why the counterproductive effects of thought suppression are evident with some stimuli and group but not others. Rassin, van Brakel, and Dieder (2003) manipulated participants’ expectations concerning the efficacy of thought suppression and found that individuals who were given information concerning the beneficial use of suppression before they used this strategy reported fewer unwanted thoughts during suppression attempts. Thus, their data suggest that individuals’ perceptions of their mental control abilities play a role in the use of adaptive and maladaptive control strategies. Luciano, Algarabel, Tomas, and Martinez (2005) conducted further examination of an individual’s perceived ability to control cognitions using the Thought Control Abilities Questionnaire (TCAQ). The TCAQ assisted in measuring individual differences in the perceived ability to manage unwelcome interfering cognitions. Luciano and colleagues found a negative relationship between individuals’ belief in their ability to control unwanted thoughts and symptoms associated with depression, worry and the punishment subscales of the TCQ.

Research with the TCAQ suggests a negative relationship between individuals’ belief in their ability to control unwanted thoughts and symptoms associated with depression, worry, and the punishment subscale of the TCQ (Luciano et al., 2005). Hoping and de Jong-Meyer (2003) emphasised the importance of discriminating between the perceived ability to suppress and the tendency to suppress when trying to establish a connection between mental control and psychological disorders. Making a distinction between actual and perceived ability to control unwanted thoughts may shed light on the discrepant research results regarding thought suppression.

2.1.1. Purpose. The primary focus of the current study was to examine the types of thought control strategies used by individuals with social phobia. In doing so, a comparison
between a control group to individuals with a principal diagnosis of social phobia on the five types of thought control strategies assessed by the TCQ (Wells & Davies, 1994) was performed, in an effort to address two questions. First, do individuals with social phobia control their unwanted thoughts with maladaptive strategies? If this is the case, do these control strategies share a relationship with symptoms characteristic of social phobia and other important indices of mental control?

To address the questions outlined above, the first objective was to identify the adaptive (social control and reappraisal) and maladaptive (punishment and worry) thought control strategies used by individuals with social phobia relative to a control group. In line with the research evidence, it is hypothesised that when compared to control participants, individuals with social phobia should score higher on maladaptive thought control strategies, specifically worry and punishment (Reynolds & Wells, 1999). Frequent use of these two mental control approaches has been shown to characterise other anxiety disorders (Coles & Heimberg, 2005). As hypersensitivity to perceived negative evaluation by others is one of the core features of social phobia, it was expected that worry, would be one of the principal mental control strategies used, due to individuals with this disorder often being concerned of appearing foolish, behaving badly or the negative impression one is making. Due to the ineffectiveness of this mental control strategy, individuals with social phobia may also subsequently engage in greater use of punishment, further exacerbating difficulty in controlling unwanted thoughts. It was expected that individuals with social phobia would use functional strategies such as social control and reappraisal significantly less often than control participants. The literature reveals that distraction has been considered dysfunctional when employed as a control strategy (McKay & Greisberg, 2002); however, more current research deems it functional (Belloch et al., 2009). In terms of social phobia, there has been limited research examining distraction and the impact on whether this mental control strategy is
functional or dysfunctional in nature. That said, Cassin and Rector (2011) found that following an anxiety provoking event, for individuals with social phobia, distraction neither increased nor decreased distress relative to a control group. As a result of the aforementioned conflicting evidence surrounding whether this mental control strategy can be classified as functional or dysfunctional, no specific hypothesis has been established.

A second research objective was to investigate the relationship between control strategies and social anxiety cognitive symptoms (specifically fear of negative evaluation), depression, quality of life, and other indices of mental control. Based on the identification of worry and punishment as dysfunctional in the literature, it was hypothesised that these factors would correlate positively with fear of negative evaluation and depression, have a negative relationship to quality of life and the perceived efficacy of controlling ones’ thoughts (TCAQ), and be positively related to perceived use of thought suppression (WBSI). As reappraisal and social control are deemed functional strategies (McKay & Greisberg, 2002), it was expected a reverse result in comparison to worry and punishment. Identifying the direction of the relationship between distraction and measures of psychopathology will assist in determining whether support exists for it being categorized as a functional or dysfunctional mental control strategy.

2.2. Method

2.2.1. Design. Patients referred for treatment were diagnosed with social phobia by clinical psychologists. The clinical psychologists administered a structured diagnostic interview: the MINI – Mini International Neuropsychiatric Interview (Sheehan et al., 2001) to all participants. The clinical psychologist diagnosticians in the current study were trained to strict reliability standards similar to that outlined by Brown, DiNardo, Lehman, and Campbell (2001). This included formal training of the clinical psychologists who conducted the assessment and strict adherence to the criteria as laid out for administering and scoring the
MINI to patients. The primary diagnosis was collaboratively based on the most debilitating problem. Following the assessment session, study participants completed the Beck Depression Inventory (BDI-II), Social Interaction Anxiety Scale (SIAS), Social Phobia Scale (SPS), Quality of Life –Enjoyment Satisfaction Questionnaire (QLESQ-SR), White Bear Suppression Inventory (WBSI), Thought Control Ability Questionnaire (TCAQ) and the Thought Control Questionnaire (TCQ). The study was approved by an institutional ethical review board.

2.2.2. Participants. This study included 28 participants with a primary axis 1 DSM-IV diagnosis of social phobia and 42 individuals with no clinical disorder. The clinical participants were recruited from the Centre for Clinical Interventions, a mental health facility located in Perth, Western Australia; they had a mean age of 32.82 (SD = 12.11) and nine (32%) were women. Comorbid disorders were also identified among those diagnosed with social phobia. Among those with comorbid diagnoses, 11 (39%) met criteria for dysthymia, 4 (14%) for major depressive disorder, 3 (11%) for generalised anxiety disorder, and 1 (4%) for panic disorder. The non-clinical comparison group was comprised of first-year university students and individuals employed within the public sector in Perth, WA; they had a mean age of 26.52 (SD = 13.42) and 28 (67%) were women. The percentages of women in the two groups were significantly different but there was no significant difference in mean age between groups \( t(68) = 2.00, p = .07 \). As was the case with the clinical group, the non-clinical group was assessed based on the administration of the MINI. Allocation to the non-clinical group occurred when this assessment did not uncover axis one clinical disorders. Recruitment of the non-clinical group was through the responses to an advertisement at the place of employment (for public sector employees) and in a first year psychology class (for university students). Participants were not compensated for participation in the study.

2.2.3. Measures.
Mini International Neuropsychiatric Interview (MINI PLUS Version 5.0. Sheehan et al., 2001). The MINI is a structured diagnostic interview based on both DSM-IV and ICD-10 criteria, with good inter-rater and test–retest reliability (Sheehan et al., 1997). It has good agreement with other diagnostic instruments, including the Structured Clinical Interview for DSM (Sheehan et al., 1997) and the Composite International Diagnostic Interview (Lecrubier et al., 1997), thereby supporting its use in this study.

Beck Depression Inventory - II (Beck, Steer, & Browne, 1996). This measure assesses the presence and severity of cognitive, affective and somatic symptoms of depression. The BDI-II is a 21-item measure in which respondents indicate, on a scale from 0 to 3, the presence and severity of the current state of each symptom during the past two weeks. Items are added together, with total possible scores ranging from 0 to 63 with higher scores reflecting greater severity of depression. In the current study, depression was measured based on the high level of co-morbidity between depression and social anxiety/phobia (Rapee, 1995). The reliability and validity of the BDI-II have been well established, with a test–retest reliability coefficient of .93 and Cronbach’s alpha coefficient of .86. In the current study, for individuals with social phobia, the Cronbach alpha coefficient was .84. For the control group, alpha was: .79.

Fear of Negative Evaluation Scale (FNES; Watson & Friend, 1969). The FNES is a 30-item true/false self-report questionnaire which measures concerns regarding social-evaluative threat. This scale aids in the assessment of the level of social anxiety. The FNES has demonstrated internal consistency ranging from .94 to .96 (Watson & Friend, 1969) and helps differentiate between individuals with social phobia and other anxiety disorders (Oei, Kenna, & Evans, 1991). For individuals with social phobia, in the current study, the Cronbach alpha coefficient for the FNE is = .83 and for the control group it is = .87.
Social Phobia and Social Interaction Anxiety Scales (SPS, SIAS; Mattick & Clarke, 1998). Both the SPS and SIAS are 20 item Likert scale questionnaires. The SIAS assesses anxiety during interactions with others and the SPS assesses an individual’s anxious anticipation of being observed or of actually being observed while performing a variety of tasks. The 5-point response scale for both scales is “Not at all”, “Slightly”, “Moderately”, “Very”, or “Extremely characteristic of me”. Mattick and Clarke (1998) report that the internal consistencies for the SPS (Cronbach alpha = .89) and SIAS (Cronbach alpha = .93) are high within clinical samples as well as demonstrating good psychometric qualities in terms of reliability and concurrent and discriminate validity. In the current study, for individuals with social phobia the Cronbach alpha coefficient are for the SPS (= .88) and the SIAS (= .92). For the control group, the Cronbach alpha coefficient are for the SPS (= .83) and the SIAS (= .85).

The Quality of Life, Enjoyment, Satisfaction Questionnaire – Short Form (QLESQ-SF; Endicott, Nee, Harrison, & Blumenthal, 1993). The original QLESQ is a 93-item valid and reliable self-report measure of quality of life. It measures the degree of enjoyment and satisfaction with various areas of daily living. The short form of this scale, the QLESQ-SF (Endicott et al., 1993), comprises the first 14 items of the General Activities Scale of the original scale. The items cover physical health, economic status, relationships, living/housing situation, mood, work, medication (if pertinent), and overall life satisfaction domains. The total score is the sum of these items expressed as a percentage of the maximum score. Lower scores indicate poorer perceived quality of living. It has a test–retest reliability of .74 in a clinical sample (depressed individuals) and the depressed sample and internal consistency of .92 for the Cronbach alpha (Endicott et al., 1993). For the present sample of individual's with social phobia Cronbach alpha is .89 and .83 for the control group.
**White Bear Suppression Inventory (WBSI: Wegner & Zanakos, 1994a).** The WBSI is a 15 item self-report tool for assessing thought suppression and the occurrence of unwanted intrusive thoughts. It is rated on a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores may range between 15 and 75, with higher scores indicating that the individual experiences greater frequency of intrusive thoughts. Hoping and de Jong-Meyer (2003) demonstrated that the WBSI evidenced high internal consistency (with a Cronbach’s alpha of 0.88) in addition to producing a distinct one-factor solution. These clinical results were consistent with those obtained in the initial work with a student population (Wegner & Zanakos, 1994b). For individuals with social phobia in the current study this is: .78 for the Cronbach alpha and .84 for the control group.

**Thought Control Ability Questionnaire (TCAQ: Luciano et al., 2005).** The 25-item TCAQ (Luciano et al., 2005) was used to assess participants’ individual differences in their perceived ability to control unwanted intrusive cognitions. Participants responded to statements (e.g. “It is easy for me to free myself of troublesome thoughts”) using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores may range between 25 and 125, with higher scores indicating that individuals perceive themselves to be better able to control their own thoughts. The TCAQ included one factor with a Cronbach’s alpha coefficient of .92 and a test–retest reliability of .88 after 2 months (Luciano et al., 2005). In the current study, for individuals with social phobia the Cronbach alpha coefficient was .86, and .81 for the control group.

**Thought Control Questionnaire (TCQ: Wells & Davies, 1994).** The TCQ is a 30-item self-report measure developed and validated to identify the frequency of use of five strategies of thought control. These are: “Punishment” (anger directed at self in the form of criticising or pinching oneself to control thoughts), “Reappraisal” (attempts at generating alternative ways of interpreting the thought), “Social Control” (engaging friends in an attempt to better
deal with own thoughts), “Worry” (focusing and dwelling on other negative concerns), and “Distraction” (diverting ones’ attention by engaging in an activity or thinking about another belief). Each subscale consists of six items rated on a four-point Likert-type scale (from 1 = “never” to 4 = “almost always”). Wells and Davies (1994) have demonstrated that the TCQ demonstrates reliability over a period of 6 weeks (test–retest coefficients, = .67–.83). Additionally, subscales show moderate to strong internal consistency (Cronbach alpha coefficient’s were: Distraction = .72; Worry = .71; Punishment = .64; Social Control = .79; and Reappraisal = .67). In terms of the present studies sample the Cronbach alpha coefficients were: Distraction = .70, Worry = .67, Punishment = .68, Social Control = .76, and Reappraisal = .67 for individuals with social phobia. For the control group, the internal consistency alphas were: .71, .73, .66, .76 and .64 respectively.

2.3. Results

There was a significant difference between the social phobia and control group for each of the specific symptom measure questionnaires. The social phobia group evidenced greater clinical severity than the control group. Table 2-1 summarises information about these groups.
Table 2-1.

*Characteristics of Participants in Each Group*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Social Phobia</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNE</td>
<td>24.68 (4.86)</td>
<td>15.48 (8.04)*</td>
</tr>
<tr>
<td>BDI-II</td>
<td>19.32 (9.40)</td>
<td>9.88 (9.34)*</td>
</tr>
<tr>
<td>SIAS</td>
<td>49.04 (12.38)</td>
<td>22.76 (12.94)*</td>
</tr>
<tr>
<td>SPS</td>
<td>40.11 (15.29)</td>
<td>14.33 (11.38)*</td>
</tr>
<tr>
<td>QLESQ-SF</td>
<td>48.81 (19.99)</td>
<td>74.2 (12.43)*</td>
</tr>
</tbody>
</table>

Note: FNE, Fear of Negative Evaluation; BDI-II, Beck Depression Inventory; SIAS, Social Interaction Anxiety Scale; SPS, Social Phobia Scale; QLESQ-SF, Quality of Life Enjoyment Satisfaction Questionnaire – short form; * p < 0.001

2.3.1. **Use of thought control strategies by individuals with social phobia and controls.** A 5 (thought control strategies) x 2 (social phobia versus control participant groups) ANOVA with reported levels of each thought control method as the dependent variable with repeated measurement on the first factor revealed significant main effects for thought control strategies \[F (4, 63) = 33.82, p < .001\], yet not for group \[F (1, 66) = 0.541, p = .465\] and was modified by an interaction with the thought control strategy x group \[F (4, 63) = 5.35, p = .001\]. In order to explore this significant interaction, a simple main effects analysis was conducted.

Analysis of simple main effects for thought control strategies revealed that individuals with social phobia reported significantly lower levels of distraction as a thought control strategy \[t (66) = 3.51, p = .001\] but higher levels of worry \[t (66) = 2.31, p = .024\] than the control participants. In terms of effect sizes for groups, expressed as Eta squared, the effect sizes were .16 for distraction (large) and .07 for worry (moderate). The punishment, social
control and reappraisal mental control strategies did not differ significantly across the two
groups (Table 2).

2.3.2. Relative use of TCQ within group. Simple main effects of Group revealed that
among individuals with social phobia, there was an overall significant effect for frequency of
using the different thought control strategies \( F(4, 22) = 8.02, p < .001 \). Paired t-tests
demonstrated that individuals with social phobia reported using distraction and reappraisal
significantly more compared to other strategies. These patients used social control, worry,
and punishment similarly.

For the non-patients, there was an overall significant effect for frequency of using the
different thought control strategies \( F(4, 38) = 39.76, p < .001 \). Paired t-tests demonstrated
that this group of participants reported using distraction and reappraisal significantly more
often than worry, punishment and social control strategies, and the social control strategy
significantly more frequently than worry and punishment strategies.
Table 2-2.

Clinical Comparison Between Individuals with Social Phobia and the Control Group

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Social Phobia</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBSI</td>
<td>57.24 (7.72)</td>
<td>47.29 (12.86)***</td>
</tr>
<tr>
<td>TCAQ</td>
<td>59.63 (12.90)</td>
<td>78.45 (16.61)***</td>
</tr>
<tr>
<td>TCQ Distraction</td>
<td>12.77 (1.95)(^a)</td>
<td>15.29 (3.32)***(^a)</td>
</tr>
<tr>
<td>Social control</td>
<td>10.65 (3.54)(^b)</td>
<td>12.14 (3.92)(^b)</td>
</tr>
<tr>
<td>Reappraisal</td>
<td>13.88 (2.92)(^a)</td>
<td>14.62 (4.02)(^a)</td>
</tr>
<tr>
<td>Worry</td>
<td>11.23 (3.20)(^b)</td>
<td>9.38 (3.22)(^c)</td>
</tr>
<tr>
<td>Punishment</td>
<td>10.62 (3.48)(^b)</td>
<td>9.26 (2.37)(^c)</td>
</tr>
</tbody>
</table>

Note\(^1\): Standard deviations appear in parentheses. WBSI, White Bear Suppression Inventory; TCAQ, Thought Control Ability Questionnaire; TCQ, Thought Control Questionnaire; * p < .05; *** p < .001

Note\(^2\): Means with different subscripts within each column indicate different frequency of usage of thought control strategies within groups (post hoc t-tests with Bonferroni correction).

2.3.3. Correlations of thought control strategies with the TCAQ, WBSI, BDI-II, FNE and QLESQ-SR. The relationships between thought control strategies and fear of negative evaluation, depression, quality of life, perceived ability to control thoughts, and the occurrence of unwanted intrusive thoughts were examined (see Table 2.3). Cognitive change (as measured by the FNE) was examined in terms of the relationship with mental control strategies, thus general measures of social phobia (i.e. the SPS and SIAS) were not used. To prevent suppression of correlations as a result of a restricted range of scores, these correlations were conducted for the entire sample (Social Phobia and Controls combined). Prior to combining the two groups, it was confirmed that the scores on these measures were normally distributed by examining the kurtosis and skew for each measure. These correlations revealed that greater use of worry and punishment strategies were associated
with higher levels of negative evaluation, depressive symptoms, and chronic thought suppression (WBSI) and lower perceptions of the ability to control thoughts (TCAQ). Both punishment and distraction were inversely related to quality of life. Moreover, higher levels of distraction were related to a greater perception of control of thinking. Levels of reappraisal and social control were not significantly correlated with any of the measures.

Table 2-3.

Correlations Between Thought Control Strategies, FNE, Depression, Quality Of Life, Thought Suppression and the TCAQ

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Distraction</th>
<th>Social</th>
<th>Reappraisal</th>
<th>Worry</th>
<th>Punishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNE</td>
<td>-.22</td>
<td>-.09</td>
<td>-.04</td>
<td>.44***</td>
<td>.47***</td>
</tr>
<tr>
<td>BDI-II</td>
<td>-.16</td>
<td>-.16</td>
<td>-.04</td>
<td>.44***</td>
<td>.58***</td>
</tr>
<tr>
<td>QLESQ-SF</td>
<td>-.41*</td>
<td>-.10</td>
<td>-.08</td>
<td>-.04</td>
<td>-.50***</td>
</tr>
<tr>
<td>WBSI</td>
<td>-.13</td>
<td>-.19</td>
<td>.04</td>
<td>.58***</td>
<td>.51***</td>
</tr>
<tr>
<td>TCAQ</td>
<td>.29*</td>
<td>.16</td>
<td>-.11</td>
<td>-.50***</td>
<td>-.56***</td>
</tr>
</tbody>
</table>

Note. FNE = Fear of Negative Evaluation Scale; BDI-II = Beck Depression Inventory; QLESQ-SR = Quality of Life, Enjoyment, Satisfaction Questionnaire – short form; WBSI = White Bear Suppression Inventory; TCAQ = Thought Control Ability Questionnaire. * p < .05, ** p < .001 (two-tailed).

2.4. Discussion

This is the first study to directly examine the relationship between the fear of negative evaluation in individuals with social phobia and their utilisation of thought control strategies. Individuals with social phobia evidenced greater use of worry as a maladaptive mental control strategy and less use of distraction than the control group. Furthermore, worry and punishment strategies correlated positively with fear of negative evaluation, depressive
symptoms, and thought suppression, yet the relationship was reversed with regard to the association with perception of the degree of control over one’s thoughts. Participants’ quality of life correlated negatively with the punishment and distraction mental control strategy. Additionally, the distraction control strategy correlated positively with the perceived control of thoughts.

The initial aim of this study was to examine the use of functional and dysfunctional thought control strategies in individuals with and without social phobia. The results only partially supported the hypothesis that individuals with social phobia demonstrate greater use of a dysfunctional strategy (worry) and less use of distraction than control participants. Similar results have been obtained in research into other anxiety disorders, including acute stress disorder (Holeva et al., 2001), OCD (Abramowitz et al., 2003; N. Amir et al., 1997), and generalised anxiety disorder (Coles & Heimberg, 2005). The results of Fehm and Hoyer’s (2004) research are of greatest relevance to the current study; they found that individuals with social phobia used distraction and social control significantly less often than control participants, yet engaged in punishment more frequently. When examining within clinical-group comparisons, they found minimal differences in use of the five mental control strategies. The only difference evident when comparing thought control strategy use across clinical groups was the social control strategy: individuals with social phobia used this strategy significantly less frequently than both the control group and individuals with OCD. Although their identification of individual’s with social phobias’ significantly higher use of distraction is consistent with the present research, the lack of significant difference for use of worry by individuals with social phobia and heightened use of the punishment thought control strategy in their study warrants further exploration.

The elevated use of punishment but not worry by individuals with social phobia in Fehm and Hoyer’s (2004) study is at odds with the result for the present research. Belloch
and colleagues (2009) examined whether the TCQ subscales were used differently across individuals with OCD, depression, a control group, and a group who evidenced “anxiety disorders distinct from OCD,” which included a small subsample of individuals with social phobia. Of the 87 individuals who exhibited a clinical disorder, 25 demonstrated an anxiety disorder of which only four were individuals with social phobia. Belloch and colleagues found that individuals with OCD used the punishment control strategy more than participants with OCD, depression, a control group and a group who evidenced “anxiety disorders distinct from OCD”. Their results are in line with the outcomes of the present research but similarly at odds with those of Fehm and Hoyer’s study for individuals with social phobia in terms of the punishment strategy being more specific to OCD than to other anxiety disorders such as social phobia. Collectively, these outcomes can be interpreted as meaning that the specificity of certain strategies of thought control (such as: worry and punishment) for specific clinical disorders is doubtful. Nevertheless, these strategies are more strongly associated with disorders that involve worry, anxiety and obsessional features.

The role of distraction in the mental control of unwanted thoughts remains unclear. In the present study, this was the one mental control strategy used significantly less often than other strategies by individuals with social phobia. Although distraction was used less frequently, it is possible that distraction is used more effectively on the few occasions when it is used. Thus, there may be less need for distraction to be used, because when it is used, it achieves its desired aim. This warrants further research.

With regard to the lack of difference between the groups’ use of the social control and reappraisal mental control strategies calls into question the utility of examining these strategies with the TCQ for individuals with social phobia. However, the absence of any difference between the clinical and control groups’ use of the reappraisal strategy is consistent with the results of other studies (e.g., Coles & Heimberg, 2005; Fehm & Hoyer,
A further study by Werner, Goldin, Tali, Ball, Heimberg and Gross (2011) examined the frequency and self-efficacy of five emotion regulation strategies that were used by individuals with social phobia and a healthy control group according to Gross’s process model of emotion regulation (Gross, 1998b). As with the present dissertation, despite an unexpected finding, these researchers found that both groups used cognitive reappraisal with similar frequency. Furthermore, researchers utilising an experimental paradigm (fMRI), found that both individuals with social phobia and a control group demonstrated equivalence in their implementation of cognitive reappraisal to decrease negative thoughts and emotion (Goldin, Manber, Hakimi, Canli, & Gross, 2009).

The utility of the TCQ for individuals with social phobia could be determined by examining whether individuals with this disorder display adaptive change in these two mental control strategies following cognitive behavioural therapy (CBT). Following CBT, one would expect both increased engagement with others (an increase in the use of “social control”) and more effective exercise of disputation and challenging of unrealistic thoughts (enhanced “reappraisal”) assuming that the reappraisal and social control strategies are a valid representation of their respective constructs.

The second aim of the current study was to examine the relationship between the TCQ subscales and various measures of psychopathology. Positive associations were found between measures of fear of negative evaluation, depression, and the WBSI total score and for both the punishment and worry subscales of the TCQ. These positive correlations allude and tentatively support the classification of worry and punishment as maladaptive control strategies. Punishment, but not worry, was negatively associated with quality of life, implying that angry self-statements or other aversive strategies rather than worries were associated with diminished quality of life scores. This finding suggests that worry acts as a temporary respite from the principal aversive intrusions that one is distracting oneself from.
The negative association of distraction with quality of life suggests this strategy is dysfunctional. Interestingly, distraction was positively correlated with the perception of control over unwanted thoughts (the TCAQ). As Abramowitz and colleagues (2003) observed, the use of distraction aids in hindering conscious awareness of unwanted thoughts by assisting an individual to form fewer anxiety provoking evaluations of these intrusions. Although distraction may have a short term advantage in quelling unwanted cognitions, this temporary respite may contribute to an artificial elevation in perceived control over ones’ thoughts. Wegner and colleagues (1987; exp. 2) demonstrated that unfocused distraction (i.e., seeking an unrestrained number of distractors) results in significantly more unwanted thoughts than focused distraction (i.e., thinking of only one distractor). It could be that completion of the distraction items on the TCQ is indicative of the use of a general form of distraction.

In the present study, control participants used distraction significantly more often than individuals with social phobia. This was the only statistically significant between-group result for the thought control strategies. Additionally, both groups used this strategy more so than other strategies. This suggests that control participants used focused distraction, thereby exerting more control over unwanted thoughts. On the other hand, individuals with social phobia may use this strategy in an unfocused manner, thereby contributing to an increase in unwanted cognitions (Wenzlaff & Wegner, 2000). The results imply that increased use of distraction is associated with low quality of life despite an increased perception of control over unwanted thoughts. This lends partial support for the earlier consideration of this mental control strategy as dysfunctional (McKay & Greisberg, 2002).

The present study has several theoretical and clinical implications. Cognitive theorists (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997) have proposed that an information processing bias contributes to the maintenance of social phobia. Specifically, Mogg, Bradley,
de Bono, & Painter (1997) proposed the vigilance-avoidance hypothesis in which hypervigilance for perceived threat is followed by avoidance. This maladaptive process reduces the opportunity to habituate to or reappraise stimuli as non-threatening. The undue use of worry and punishment control strategies potentially safeguards misguided interpretations and the anxiety associated with maladaptive thoughts. It is hypothesised that this induces increased non-effective suppression attempts, greater cognitive preoccupation, and increased anxiety. As a result, the mixture of maladaptive thought control strategies and behavioural avoidance is theorised to maintain social anxiety symptoms. From a clinical perspective, this underscores the need to reduce patients’ attentional avoidance by both encouraging individuals to dispute their misguided perceptions and promote more adaptive reappraisals of danger. Individuals with social phobia would be expected to benefit from psycho-education regarding the adaptive and maladaptive strategies used to control negative unwanted thoughts.

A further theoretical perspective, raised by the current research, involves the notion that self-focused attention is an important factor in social anxiety. Recent clinical models of social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997) suggest that increased self-focused attention contributes to a buildup in negative thoughts and a decrease in positive thoughts associated with social interactions (Burgio, Merluzzi, & Pryor, 1986). It may be that increased use of maladaptive control strategies (worry and punishment) and decreased use of adaptive ones (reappraisal and social control) contribute to increased self-focused attention, thereby reducing adaptive habituation to negative thoughts. This attentional bias guides an individual’s focus away from social information that might contradict negative social evaluative beliefs. Thus, individuals with social phobia who engage in heightened levels of worry by thinking about different negative worries or past worries contribute to the creation of a misguided impression of how they appear to others. These theoretical
observations are important hypotheses that require further examination through future clinical research.

Using worry to control unwanted negative evaluative thoughts may also relate to metacognitive beliefs about these unwanted thoughts, such as those discussed by Wells and Cartwright-Hatton (2004). For example, one particular metacognition — positive beliefs about worry — involves the maladaptive perception that worry assists in coping. The association with metacognitions was supported in the present study by the significant negative relationship of the TCAQ with the worry and punishment control strategies. Despite the likely significance of such relationships, only two known studies have examined metacognitions in individuals with social phobia (McEvoy, Mahoney, Perini, & Kingsep, 2009; Wells & Carter, 2001). The link between metacognitions and the use of thought control strategies requires further empirical examination. This will assist in better understanding other cognitive factors that contribute to the use and efficacy of mental control strategies.

The results from the current study should be interpreted within the context of its limitations. First, the WBSI and the TCQ measure suppression tendencies and thought control strategies with regard to general unwanted invasive thoughts. As it is likely that individuals use various means of managing different thoughts, the non-specific nature of the questionnaires may contribute to inaccurate identification of thought control strategies used for different thought content themes. This concern may be even more pertinent when comparing a clinical group with a control group due to the inherent difference in cognitive concerns. Further research could examine whether individuals with social phobia respond to thoughts of a negative evaluative nature with mental control strategies that differ from those employed by individuals with other anxiety disorders and/or a non-patient group. Second, the clinical group in the present study was limited to individuals with a primary diagnosis of
social phobia and this restricts our findings and limits generalisations to other clinical samples. Based on the relatively high rate of comorbid depression in social phobia (Rapee, 1995), it would be interesting in future studies to include individuals with a primary diagnosis of depression to determine whether this alters the specific use of mental control strategies. Another limitation involves the inability to make causal inferences due to the design of the study. That is, despite significant correlations between the FNE and the worry and punishment control strategies, it is not possible to ascertain whether these dysfunctional mental control strategies cause elevations in FNE or whether this relationship is inverted or a ‘third factor’ is responsible. This would be a particularly interesting question to address in future research, because if maladaptive control strategies exacerbate fear of negative evaluation it would suggest that therapies should focus on reducing maladaptive control strategies and increasing the use of adaptive ones. Both experimental and treatment studies exploring the sequential relationships between thought control and negative cognitions are required to extend the findings from this study. A further limitation to the present study is that the findings from this study may be associated with low power. With low statistical power, there is a reduced chance of detecting a true effect, and that low power also reduces the likelihood that a statistically significant result reflects a true effect. As a result, it is important to replicate this study with increased group sizes.

In summary, this research supports the importance of focusing our clinical attention on adaptive and maladaptive forms of mental control in social phobia. Additionally, the findings underscore the clinical value of providing psycho-education about the specific benefits and disadvantages of specific mental control strategies and assisting our clients in putting into practice in vivo emphasis in using adaptive control strategies. Understanding cognitive strategies and the relationships that exist between symptomatology and other mental indices, aids in disrupting the maintenance of unwanted thoughts in psychological disorders such as
social phobia. The present research demonstrates that individuals with social phobia exhibit greater use of worry and less use of distraction than healthy individuals. The greater use of maladaptive control strategies probably contributes to reduced adaptive habituation to negative thoughts such as those surrounding fear of negative evaluation. The findings regarding the strategy of distraction, suggest that it is important to clarify its use as both a specific or general form of diversion and whether it is a dysfunctional or functional strategy. Moreover, one’s perception of mental control and whether an individual utilises focused or unfocused distraction may provide important means of clarifying the source of conflicting results in the literature.

To conclude, the present study contributes to the growing literature on the factors contributing to exaggerated estimates of the fear of negative evaluation by individuals with social phobia and the mental control strategies used to manage these and other unwanted thoughts. It is hoped that further work in this area can help reduce the functional impairment associated with elevated levels of social anxiety. The finding from the present study in which the distraction mental control strategy is negatively correlated with quality of life yet positively with perceived control of thoughts necessitates further examination. Additional research would potentially assist in understanding whether distraction is indeed a dysfunctional mental control strategy. Furthermore, from a clinical perspective it would be beneficial to ascertain whether distraction and other mental control strategies – functional and dysfunctional, change in frequency following cognitive behavioural treatment.
Chapter 3: Study Two

3.1. Rationale

The preceding chapter served to confirm that individuals with social phobia demonstrated greater use of worry and less use of distraction mental control strategies than the control group: in contrast to most published literature, use of punishment, reappraisal and social control did not differ significantly between groups. The current chapter will detail a study which helps to better understand whether individuals with social phobia increase their use of adaptive mental control strategies and decrease use of maladaptive ones following Cognitive Behaviour Group Treatment (CBGT). Additionally, based on the finding from Chapter Two, that individuals with social phobia demonstrate significantly less perceived control of their thoughts, metacognitions will be explored to a greater extent in Study Two.

3.2. Introduction

Cognitive treatments for social phobia are based on the rationale that beliefs, interpretations, and assumptions about situations produce anxiety (Beck et al., 1985). People with social phobia are excessively concerned about negative social evaluation, which means that anticipated or actual performance is interpreted in a catastrophic manner, leading to excessive anxiety and avoidance (Clark & Wells, 1995; Hofmann, 2007; Rapee & Heimberg, 1997). Furthermore, individuals with social phobia tend to ruminate upon what others think of them (McEvoy & Kingsep, 2006) and be preoccupied with what kind of impressions they make upon others (M. R. Leary, 2001). Their anxiety reduces the attention they allocate to what is happening in social situations, thereby potentially reducing their performance (Hirsch & Clark, 2004).

In consideration of the substantial cognitive deficits evident in the disorder, several questions arise. Firstly, does completion of CBGT assist in developing more adaptive means of controlling such thoughts and likewise in reducing the use of maladaptive strategies?
Secondly, do factors which are theorised to be associated with (mal)adaptive mental control strategies in social phobia – such as positive and negative metacognitions, reduce in frequency following completion of CBGT? Finally, are these metacognitive reductions associated with reductions in symptomatology and frequency of maladaptive mental control strategies? Exploration of these and associated questions was the focus of this study.

Exposure is an effective treatment for social phobia, but there is some evidence (Clark et al., 2006) that managing cognitions is important in ensuring the maintenance of treatment effects. Hence, if people with social phobia use maladaptive mental control strategies, it is possible that anxiety will be maintained and the effects of treatment attenuated. Stopa and Clark (1993) suggest that individuals with social phobia often focus on themselves, attending to physiological symptoms of anxiety or their own internal experience, which may exacerbate anxiety. Furthermore, individuals with social phobia may mentally distance themselves from exposure situations (Hope, Heimberg, Juster, & Turk, 2000) and not learn that the social situations are less threatening than imagined. In order to better understand the cognitive efficacy of current treatment protocols for social phobia, it is important to ascertain whether individuals with social phobia demonstrate increased use of adaptive mental control strategies and a decreased use of dysfunctional strategies following psychological treatment.

One such means of measuring adaptive and maladaptive control strategies is Wells and Davies’ (1994) Thought Control Questionnaire (TCQ). This scale measures individual differences in the use of thought control strategies, and comprises five factors: distraction, reappraisal, social control, punishment and worry. Wells and Davies (1994) found significant positive associations between the worry and punishment scales of the TCQ, and other measures of emotional vulnerability, including worry, intrusive thoughts and anxiety. While the distraction, social control and reappraisal scales of the TCQ were not significantly
correlated with these measures, Wells and Davies hypothesised that these control strategies are more connected with functional mental health.

Despite the assumed advantage of using adaptive over maladaptive control strategies, very little research has investigated the effects of treatment in this area. In fact, the only known study examining changes in the use of cognitive strategies following treatment, was conducted using subjects with Acute Stress Disorder (Bryant et al., 2001). Their findings indicated that following completion of cognitive behaviour therapy (CBT), patients reduced their use of worry and punishment and increased their use of social control and reappraisal strategies. Furthermore, symptoms of posttraumatic-stress disorder (PTSD) were correlated with augmented use of reappraisal and social control and decreased use of worry strategies. Determining whether CBT for social phobia facilitates adaptive shifts in the use of cognitive strategies will shed light on ways to refine cognitive restructuring — a core treatment strategy.

Metacognitions may mediate the use of adaptive and maladaptive thought control strategies. In Hartman’s (1983) model of social anxiety, he proposed that:

The socially anxious individual’s manner of self-appraisal or metacognitive executions (that is, cognitions about thinking and perceptual events) is impaired and, in turn, mediates arousal, avoidance, and faulty appraisal. It is not that a deficit exists in the metacognitive domain of this clinical population, but an excess. (p. 440).

Wells and Matthews (1996) later proposed that metacognitions impact upon the propensity to engage in mental control strategies such as thought suppression. More recently, Wells (2006) suggested that mental control strategies embody one of the dimensions of metacognitive management, whilst another significant aspect is exemplified by an individual’s
thoughts about their cognitions and cognitive processes. It is these metacognitions that are likely to contribute to persistent attempts at mental control of unwanted thoughts.

Metacognitions concern beliefs or appraisals about ones’ thinking and are understood to guide the way an individual engages, perceives, and processes their cognitions, as well as their consequent behaviours (Wells, 2000; Wells & Matthews, 1996). A questionnaire which has been developed to measure metacognitions is the MCQ-30 (Fehm & Hoyer, 2004) which is a 30 item scale developed to assess five metacognitive constructs. The five subscales are: (1) positive beliefs about worry (e.g. Worrying helps me cope), (2) negative beliefs about thoughts concerning uncontrollability and danger (e.g. My worrying is dangerous for me), (3) cognitive confidence - assessing confidence in attention and memory (e.g. I do not trust my memory), (4) negative beliefs concerning the consequences of not controlling thoughts (e.g. It is bad to think certain thoughts), and (5) cognitive self-consciousness - the tendency to focus attention on thought processes (e.g. I think a lot about my thoughts).

Despite Hartman positing 30 years ago that metacognitive beliefs play an important role in the triggering of mental control strategies in social phobia (Hartman, 1983), little research has been conducted in this area. Only one study examines metacognitive change following completion of CBT with individuals with social phobia (McEvoy et al., 2009). This study’s principal focus was the examination of processing following the confrontation of anxiety-provoking situations and its association with metacognitions. With the exception of positive metacognitions (e.g. “worrying helps me cope”), metacognitions which were robustly supported pre-treatment significantly reduced after psychological treatment. However, the study did not investigate the degree to which adaptive cognitive strategies increased after treatment and the extent to which maladaptive mental control strategies decreased.
The present study aimed to investigate the relationship between social anxiety, mental control strategies, and metacognitions in individuals with social phobia who complete a Cognitive Behavioural Group Treatment (CBGT) program. It was hypothesised that there would be an increase in the frequency of use of adaptive mental control strategies, including “reappraisal” and “social control” and a decrease in maladaptive strategies (“worry” and “punishment”) following completion of the CBGT. The second hypothesis was that negative and positive metacognitions will be less frequently used following CBGT, as observed in the study by McEvoy and colleagues (McEvoy et al., 2009). The third hypothesis is that following CBGT, metacognitive reductions will be correlated with reduced social anxiety symptoms and lower incidence of maladaptive control strategies (i.e., punishment and worry).

3.3. Method

The author of this thesis was responsible for the design of this study, and the collection of data. Assessment of the participants who took part in this study were assessed by clinical psychologists who held either held a Masters or PhD qualification in Psychology.

3.3.1. Participants. At the time of this study, 37 patients presented to the Centre for Clinical Interventions (Perth, Western Australia) to take part in a psychological group therapy program for social phobia. Seven did not complete the treatment. So the sample involved 30 patients (\(M\) age = 32.13 years; SD = 10.68; Male = 20) who completed treatment and pre and post-treatment questionnaire sessions. Participants had completed an average of 12.1 years of formal education. Despite there being seven individuals who did not complete treatment, due to incomplete data sets, it was not possible to perform a comparison between individuals who completed and those that did not complete treatment. Additionally, in the previous study (Study 1), although there were a similar number of individuals with social phobia who were
enlisted for that study, there was no overlap between this and the present study. That is, the two samples were independent.

Participants received a primary diagnosis of social phobia according to DSM-IV criteria. For inclusion in this study, participants were: (a) between 18 and 60 years of age; (b) had no history of severe psychopathology such as schizophrenia, bipolar disorder; (c) demonstrated a lack of severe current levels of depression (i.e. over 45 on the Beck Depression Inventory-II). Subjects were included in this study as long as the principal diagnosis was social phobia. As a result, this was a naturalistic treatment study that excluded individuals with personality disorders and included individuals with mild to moderate comorbid depression.

3.3.2. Measures.

*Mini International Neuropsychiatric Interview (MINI PLUS Version 5.0. Sheehan et al., 2001)*. The MINI as described in Section 2.2.3. was administered to all participants by clinical psychologists trained in this assessment tool. The primary diagnosis was based on a collaborative decision between the clinician and the individual being administered this questionnaire to identify social phobia as the participant’s most debilitating mental health problem.

The following self-report questionnaires were utilised in this study and have been described previously in Section 2.2.3:

*Beck Depression Inventory - II (Beck et al., 1996)*. The reliability and validity of the BDI-II have been well established, with a test–retest reliability coefficient of .93 and Cronbach’s alpha coefficient of .86. In the current study, for individuals with social phobia, the Cronbach alpha coefficient was .81.
Fear of Negative Evaluation Scale (FNES; Watson & Friend, 1969). The FNES has demonstrated internal consistency ranging from .94 to .96 (Watson & Friend, 1969). For the current study, the Cronbach alpha coefficient for the FNE is = .89.

Social Phobia and Social Interaction Anxiety Scales (SPS, SIAS; Mattick & Clarke, 1998). Mattick and Clarke (1998) report that the internal consistencies are; for the SPS (Cronbach alpha = .89) and SIAS (Cronbach alpha = .93). In the current study, the Cronbach alpha coefficient are for the SPS (= .83) and the SIAS (= .87).

Thought Control Questionnaire (TCQ: Wells & Davies, 1994). The subscales show moderate to strong internal consistency (Cronbach alpha coefficient’s were: Distraction = .72; Worry = .71; Punishment = .64; Social Control = .79; and Reappraisal = .67). In terms of the present studies sample the Cronbach alpha coefficients were: Distraction = .69, Worry = .70, Punishment = .66, Social Control = .78, and Reappraisal = .68.

Meta-Cognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004). The MCQ-30 is a shortened 30 item version of the 65 item long form, which measures five domains of positive and negative metacognitive beliefs, metacognitive monitoring, and judgments of cognitive confidence. The 4-point response scale is: Do not agree (1), Agree slightly (2), Agree moderately (3), or Agree very much (4). The five subscales and associated internal consistency are: (1) cognitive confidence - Cronbach alpha = .93 (confidence in attention and memory, e.g. “I have a poor memory”), (2) positive beliefs about worry - Cronbach alpha = .92 (e.g., “I need to worry in order to work well”), (3) cognitive self-consciousness – Cronbach alpha = .92 (the tendency to focus attention on thought processes, e.g. “I monitor my thoughts”), (4) negative beliefs about thoughts concerning uncontrollability and danger - Cronbach alpha = .91 (e.g., “My worrying is dangerous for me”), and (5) negative beliefs concerning the consequences of not controlling thoughts and thus a need to control thoughts - Cronbach alpha = .72 (e.g., “It is bad to think
certain thoughts’’) (Wells & Cartwright-Hatton, 2004). For the present study, the Cronbach alpha coefficients were: cognitive confidence = .81, positive beliefs = .83, cognitive self-consciousness = .77, uncontrollability and danger = .84, and not controlling thoughts = .70.

3.3.3. Procedure. Participants attended an assessment interview with a clinical psychologist, first completing the MINI as a means of conducting a semi-structured interview to confirm the diagnosis of social phobia. Each prospective participant was offered free participation in the 12-week CBGT (Kemp, Thompson, Gaston, & Rapee, 2003) course and asked to attend a pre-treatment research session. This session involved completion of each of the aforementioned measures. Upon completion of the CBGT course, participants were asked to attend the post-treatment research session, where they were required to undertake the same set of measures.

The group intervention was based upon a detailed treatment manual specific to social phobia (Kemp et al., 2003). The program consisted of 12 two-hour weekly sessions of CBGT involving four to eight participants and two therapists. Each group was conducted with two therapists, whom followed a treatment manual with the principal therapist being the author of this dissertation and the second therapist being either a trained masters or doctoral student. The progress and conduct of the group was closely monitored and specifically followed the structure of the treatment manual.

This group treatment program integrated the following components:

- psycho-education about the nature of anxiety and commonly feared situations;
- presentation of a cognitive-behavioural model of social phobia focusing on maintenance of the disorder;
- cognitive restructuring techniques aimed at overestimation of probability and costs associated with perceived social danger;
• within-session behavioural experiments to test out predicted outcomes, and between session assignments for in vivo exposure to feared situations;
• conducting role plays with and without safety behaviours and comparison of results;
• attention training exercises encouraging better control of perceptions of negative evaluation and self-focused attention in regards to the activity in hand; and
• cognitive restructuring aimed at underlying core beliefs. Significant emphasis was placed on between-session tasks involving the aforementioned group based activities.

The chief facilitator for all groups in the study was a qualified clinical psychologist with clinical experience in conducting CBGT programs and providing psychological interventions to social phobia patients. A second co-therapist and postgraduate trainee clinical psychologist was also involved in the CBGT with all the treatment groups.

3.4. Results

3.4.1. Social anxiety and depression during treatment. Mean pre-treatment SPS and SIAS scores were similar to those reported in previous samples from the same clinic (Kingsep & Page, 2010), and were within the clinical range of social anxiety (Mattick & Clarke, 1998). Mean pre-treatment BDI-II scores were in the moderate range, while pre-treatment FNES scores were within the range recorded in previous research. Paired-samples t-tests for the SPS, SIAS, FNE and BDI-II indicated that scores significantly reduced at post-treatment, with large effect sizes (Cohen, 1988) (Table 3-1).
Table 3-1.

Symptom Measure Outcomes at Each Assessment Point

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre</th>
<th>Post</th>
<th>D</th>
<th>Main Effect (time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS</td>
<td>41.56 (14.66)</td>
<td>24.83 (11.43)</td>
<td>1.14</td>
<td>t(28) = 6.20***</td>
</tr>
<tr>
<td>SIAS</td>
<td>54.55 (13.31)</td>
<td>36.97 (14.95)</td>
<td>1.32</td>
<td>t(28) = 6.84***</td>
</tr>
<tr>
<td>FNE</td>
<td>25.79 (3.17)</td>
<td>17.21 (5.54)</td>
<td>2.71</td>
<td>t(28) = 7.84***</td>
</tr>
<tr>
<td>BDI-II</td>
<td>24.11 (12.62)</td>
<td>10.25 (8.22)</td>
<td>1.10</td>
<td>t(27) = 6.45***</td>
</tr>
</tbody>
</table>

Note. $d = (\text{pre-treatment score minus post-treatment score})/(\text{pre-treatment standard deviation}); M, mean; SD, standard deviation; SPS, Social Phobia Scale; SIAS, Social Interaction Anxiety Scale; BDI-II, Beck Depression Inventory-II; FNE, Fear of Negative Evaluation Scale. *** $p < 0.001.$ (post hoc t-tests with Bonferroni correction)

3.4.2. Changes in thought control strategies following treatment. Paired-samples t-tests for the TCQ subscales indicated that pre-treatment scores were significantly larger than post-treatment scores, with small to medium effect sizes (Cohen, 1988) (Table 3-2). The one exception to this was the distraction subscale, which did not change significantly between pre- and post-treatment.
### Change In the TCQ Subscale Scores During Treatment

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre</th>
<th>Post</th>
<th>D</th>
<th>Main Effect (time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distraction</td>
<td>13.14 (2.75)</td>
<td>13.48 (2.50)</td>
<td>-.12</td>
<td>t(29) = -1.02</td>
</tr>
<tr>
<td>Social Control</td>
<td>10.86 (3.64)</td>
<td>12.79 (3.50)</td>
<td>-.53</td>
<td>t(29) = -3.33*</td>
</tr>
<tr>
<td>Worry</td>
<td>10.93 (3.20)</td>
<td>9.28 (3.06)</td>
<td>.52</td>
<td>t(29) = 3.51*</td>
</tr>
<tr>
<td>Punishment</td>
<td>10.59 (2.80)</td>
<td>9.03 (2.08)</td>
<td>.56</td>
<td>t(29) = 4.23**</td>
</tr>
<tr>
<td>Reappraisal</td>
<td>13.38 (3.16)</td>
<td>15.24 (2.89)</td>
<td>-.59</td>
<td>t(29) = -3.84*</td>
</tr>
</tbody>
</table>

Note. $d = (\text{pre-treatment score minus post-treatment score})/(\text{pre-treatment standard deviation}); \ M, \ \text{mean}; \ SD, \ \text{standard-deviation}; \ TCQ, \ \text{Thought Control Questionnaire}. 
** $p < 0.001$, * $p < 0.01$ (post hoc t-tests with Bonferroni correction)

#### 3.4.3. Changes in metacognitions following treatment.

The pre-treatment MCQ-30 mean scores were significantly higher in the present study, than in Wells and Cartwright-Hatton (2004) student sample. This present research finding is mirrored in other recent research (McEvoy et al., 2009). In the present study, total MCQ-30 scores and all subscales demonstrated significant reductions pre- to post–treatment, with the Positive Beliefs subscale showing the smallest effect size. Likewise, the highest scores occurred on the cognitive self-consciousness and uncontrollability and danger subscales, followed by cognitive confidence, need to control thoughts, and positive beliefs (see Table 3-3). These results are similar to those reported by McEvoy and colleagues (2009), although these researchers demonstrated treatment change for the total and each individual subscale other than the positive beliefs subscale.
Table 3-3.

*MCQ-30 Total and Sub-Scale Score Change Following CBGT*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre</th>
<th>Post</th>
<th>$D$</th>
<th>Main Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MCQ</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>69.03 (16.53)</td>
<td>57.17 (12.04)</td>
<td>.72</td>
<td>t(28) = 5.08**</td>
</tr>
<tr>
<td>Cognitive confidence</td>
<td>12.90 (5.02)</td>
<td>10.59 (4.13)</td>
<td>.46</td>
<td>t(28) = 3.73*</td>
</tr>
<tr>
<td>Positive beliefs-worry</td>
<td>11.21 (4.25)</td>
<td>9.45 (3.28)</td>
<td>.41</td>
<td>t(28) = 3.57*</td>
</tr>
<tr>
<td>Cognitive self-consciousness</td>
<td>16.83 (3.65)</td>
<td>14.66 (3.062)</td>
<td>.59</td>
<td>t(28) = 3.10*</td>
</tr>
<tr>
<td>Negative beliefs-uncontrollability</td>
<td>15.31 (4.97)</td>
<td>13.00 (3.67)</td>
<td>.46</td>
<td>t(28) = 2.88*</td>
</tr>
<tr>
<td>Negative beliefs-not controlling</td>
<td>12.79 (4.00)</td>
<td>9.48 (2.90)</td>
<td>-.59</td>
<td>t(29) = 6.39**</td>
</tr>
</tbody>
</table>

Note. $d =$ (pre-treatment score minus post-treatment score)/(pre-treatment standard deviation); M, mean; SD, standard deviation; ** $p < 0.001$; * $p < 0.01$ (post hoc t-tests with Bonferroni correction)

### 3.4.4. Relationship between thought control, social anxiety, depression and metacognitions.

The next step in the analysis was to examine the correlations between the change score for the FNES, and depression symptoms, thought control strategies, and metacognitions. This analysis was undertaken in order to ascertain whether reductions in distorted cognitions and depressive symptoms were associated with use of specific thought control strategies and metacognitions (Table 3-4), and whether particular metacognitive beliefs were associated with the use of specific thought control strategies.

Reductions in FNE were correlated with increased use of *distraction* and *social control*, while increased FNE was positively correlated with use of *punishment* and *worry*. A
reduction in depressive symptoms was associated with increased use of the *reappraisal* control strategy, yet no other strategies were associated with these symptoms. For the SIAS, increases in scores were only positively correlated with one mental control strategy; worry. Decreases in the subscale or total MCQ-30 scores were not correlated with decreases in the FNE, yet increases in the *uncontrollability and danger* subscale were associated with increased FNE. In contrast, increases on the *cognitive self-consciousness, need to control thoughts* and *uncontrollability and danger*, subscales and MCQ-30 total scores, were significantly correlated with an increase in depression symptoms. Increases in *negative beliefs about not controlling thoughts* and *cognitive confidence* were both correlated with increases on the SIAS. Lastly, reduced use of *worry* as a mental control strategy was associated with reductions in total scores for the MCQ-30, and improvements in *cognitive confidence* and *uncontrollability and danger* of the MCQ-30. In regards to the *punishment* control strategy, reductions in this scale were only associated with reductions in the *uncontrollability and danger subscale* of the MCQ-30.

Increases in functional control strategies such as *social control* were associated with a decrease in total scores, *cognitive confidence* and *uncontrollability and danger* subscales of the MCQ-30. Improvements in *reappraisal* were associated with reductions in the *need to control the thoughts* subscale of the MCQ-30. The *distraction* subscale was not associated with any individual subscale or total score on the MCQ-30. This is not entirely surprising as it mirrors the fact that *distraction* was the only subscale of the TCQ which demonstrated no change from pre- to post-treatment.
Table 3-4.

Correlations Between Thought Control, Social Anxiety, Depression and Metacognitions

<table>
<thead>
<tr>
<th>Scale</th>
<th>FNE</th>
<th>SIAS</th>
<th>BDI-II</th>
<th>TCQ^d</th>
<th>TCQ^s</th>
<th>TCQ^w</th>
<th>TCQ^p</th>
<th>TCQ^r</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCQ^d</td>
<td>-0.42*</td>
<td>-0.27</td>
<td>-0.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCQ^s</td>
<td>-0.57**</td>
<td>-0.33</td>
<td>-0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCQ^w</td>
<td>0.55**</td>
<td>0.42*</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCQ^p</td>
<td>0.69**</td>
<td>0.20</td>
<td>0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCQ^r</td>
<td>-0.09</td>
<td>-0.19</td>
<td>-0.39*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCQT</td>
<td>0.36</td>
<td>0.43*</td>
<td>0.57**</td>
<td>-0.21</td>
<td>-0.40*</td>
<td>0.49**</td>
<td>0.36</td>
<td>-0.25</td>
</tr>
<tr>
<td>MCQ^I</td>
<td>0.31</td>
<td>0.12</td>
<td>0.36</td>
<td>0.02</td>
<td>-0.45**</td>
<td>0.57**</td>
<td>0.24</td>
<td>0.02</td>
</tr>
<tr>
<td>MCQ^II</td>
<td>0.05</td>
<td>0.03</td>
<td>0.21</td>
<td>-0.14</td>
<td>-0.09</td>
<td>0.27</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>MCQ^III</td>
<td>0.29</td>
<td>0.53**</td>
<td>0.53**</td>
<td>-0.32</td>
<td>-0.27</td>
<td>0.16</td>
<td>0.28</td>
<td>-0.29</td>
</tr>
<tr>
<td>MCQ^IV</td>
<td>0.50**</td>
<td>0.33</td>
<td>0.47*</td>
<td>-0.19</td>
<td>-0.51**</td>
<td>0.50**</td>
<td>0.55**</td>
<td>-0.24</td>
</tr>
<tr>
<td>MCQ^V</td>
<td>0.07</td>
<td>0.56**</td>
<td>0.45*</td>
<td>-0.11</td>
<td>-0.02</td>
<td>0.28</td>
<td>0.07</td>
<td>-0.41*</td>
</tr>
</tbody>
</table>

Note. BDI-II, Beck Depression Inventory-II; FNE, Fear of Negative Evaluation Scale; TCQ, Thought Control Questionnaire; d, distraction; s, social control, w, worry; p, punishment; r, reappraisal; MCQ, Meta-Cognitions Questionnaire; T, Total; I, Cognitive Confidence; II, Positive Beliefs about worry; III, Cognitive Self-consciousness; IV, Negative Beliefs about Uncontrollability and Danger; V, Negative Beliefs about not Controlling Thought:

** p < 0.001: * p <0.01

3.5. General Discussion

The first objective in this study was to examine whether the use by individuals with social phobia of adaptive control strategies increases and maladaptive strategies decrease following completion of CBGT and to examine associations between the use of specific adaptive strategies and symptom recovery. This is the first known clinical study in social phobia to examine the evidence for changes in the use of mental control strategies following CBGT. Increases in the frequency of use of social control and reappraisal strategies
following CBGT were identified, in line with the hypothesis. Regarding dysfunctional control strategies, significant reductions were observed in the frequency of use of the worry and punishment control strategies following psychological treatment.

Clinically, this study demonstrated that CBGT is associated with reducing the reported use of dysfunctional thought control strategies and increasing the use of functional means of managing unwanted thoughts in social phobia. The Clark & Wells (1995) and Rapee & Heimberg (1997) models for the maintenance of social phobia have initiated the specific analyses of the cognitive processes involved in the maintenance of social phobia. Although the present treatment study did not specifically include a focus on increasing adaptive and decreasing maladaptive control strategies, there has been research demonstrating that social anxiety symptoms can be reduced by specifically focussing on these processes (e.g. Bogels, 2006). Although it is possible that CBGT directly affected the use of specific thought control strategies, a more fitting conclusion based on the present study is that the CBGT reduced the frequency of and distress associated with unwanted thoughts. Subsequent to this, the use of and frequency of thought control strategies changed accordingly. Thus, specific addressment and management of mental control strategies would appear to be a valuable addition to clinical management programs.

For the present study, the use of distraction did not change as a result of CBGT. Wegner, Schneider, Carter, and White (1987, Experiment 2) found that focused distraction was associated with a reduction in the frequency of intrusive thoughts. Wegner and colleagues finding and the lack of change in use of distraction in the present study arguably highlights a lack of distinction between focused and unfocused distraction in the TCQ. That is, the TCQ distraction mental control strategy may not adequately discriminate between unfocused and focused distraction. This argument is further supported by research demonstrating that the adaptive means by which an individual increases mental control are
not aided by directing attention to multiple thoughts but rather by using one distractor thought to reduce the focus on the unwanted target thought (Wegner, Schneider, Knutson, & McMahon, 1991). Thus, if the *distraction* factor of the TCQ does not differentiate between focused and unfocused distraction, it may not capture change in this form of distraction utilised post-CBGT. An alternative explanation for the lack of change in use of distraction following CBGT among those with social phobia may lie in the resistance of this mental control strategy to change. That is, while standard cognitive behavioural strategies might indirectly modify use of some mental control strategies, ‘distraction’ might not be similarly affected by such methods. Further research is required to better ascertain the extent to which distraction is resistant to change following CBGT, whether it provides an advantage for individuals with social phobia in managing unwanted thoughts, and whether the TCQ is not truly capturing the fundamental aspect of this mental control strategy.

The finding that reappraisal was not found to be associated with reductions in FNE was surprising because cognitive therapy is based on a rational analysis of one’s negative and unwanted thoughts. The assumption was that reappraisal would be a core skill enhanced as a result of CBGT and reflected in a significant negative correlational relationship between these two variables. Barahmand (2009) found that reappraisal as a control strategy measured by the TCQ, was used as frequently by clinical and control groups. It may be that reappraisal (as measured by the TCQ) may not necessarily be associated with reductions in FNE cognitions, and that this mental control strategy is associated with reductions in other negative cognitions. Further research is necessary to uncover what specific cognitions this strategy targets.

More conclusive findings included decreases in fear of negative evaluation associated with increased use of social control and reduced utilisation of punishment and worry subscales on the TCQ. This result corresponds with Wells and Davies’ (1994) findings, in
that only two of the five thought control strategies (punishment and worry) positively correlated with measures of psychopathology. Use of social control was positively correlated with group participants’ FNE. This finding may be a reflection of increased social interactions between group participants, and not necessarily increased social interaction outside of the group. Effective psychological treatment for social phobia involves the reduction of fear and avoidance associated with social interactions. Thus, future research should attempt to ascertain the extent to which the same outcomes are evident in individual CBT for social phobia.

The only thought control scale linked to a reduction in depressive symptoms pre- to post-CBGT, was an increased use of the reappraisal strategy. This finding highlights the potential role that different mental control strategies play in the management of social anxiety and depressive symptoms. It may be that management of depression is based on use of reappraisal as a control strategy, while regulation of social anxiety symptoms (FNE, specifically) may be more effectively managed with distraction and social control. It is important that future research determines the extent to which reappraisal has diagnostic utility as a control strategy, and whether socially anxious and depressed cognitions are managed by different mental control strategies.

This study’s second objective was to evaluate metacognitive change among the individuals with social phobia in the CBGT group. The focus was to determine which of these changes best correlated with reductions related to fear of negative evaluation, depressive symptoms and the use of mental control strategies. Only one other study has examined metacognitive change in those with social phobia following CBGT (McEvoy et al., 2009). For the present research, at pre-treatment, all sub-factors of the MCQ-30 were highly endorsed, and significant reductions were evident post-treatment. Similar results were yielded in the study by McEvoy and colleagues, but in their results the positive beliefs
subscale did not significantly change following treatment. One possible explanation for the lack of change in positive metacognitions in the aforementioned study is the high co-morbidity rate of Generalised Anxiety Disorder (GAD); which was 43% in their sample. Wells and Carter (2001) suggested that positive beliefs about worry are resistant to therapeutic change in GAD. The high level of endorsement of this metacognition among individuals with GAD, and the high comorbid rate of this disorder in the McEvoy et al. study, potentially explain such divergent results as compared to the findings of the present study. This could point to the low co-morbid rate of GAD in the subject sample which participated in the present study and thereby explain the reason for significant change of positive metacognitions from pre- to post-treatment in the present study.

Only one of the metacognitive factors, *uncontrollability and danger*, shared a significant relationship with FNE. McEvoy et al. (2009) completed a similar analysis yet did not utilise the FNE. However, in their study significant associations with the aforementioned metacognition were found using the SIAS, which contains items reflecting cognitive, affective and behavioural reactions to interactional situations, as opposed to the FNE which is principally focused on cognitive reactions. McEvoy et al. identified the existence of a significant relationship between social anxiety symptoms and the metacognitive perception that worrying thoughts persist despite control attempts and the associated difficulties in ignoring these thoughts. For the present study, a similar result was evident with relation to the SIAS and the significant correlations with these aforementioned metacognitions. What is surprising is the lack of associations between the core symptom of social phobia — FNE — and other metacognitions in the present study.

Wells and Carter’s (2001) findings emphasise the limited role that metacognitions play in social phobia. Their study revealed that individuals with social phobia endorsed metacognitions less frequently than individuals with depression and GAD. It is important to
note that the CBGT utilised in the present study did not specifically focus on metacognitive change, thereby attenuating the potential for these factors to impact upon social anxiety symptoms in this instance. This may explain the low impact of metacognitions on social anxiety symptom change in this study. Another potential reason for the limited role of metacognitions in social phobia in the present study is related to the MCQ-30 itself. Since the emphasis for this scale is on worry, which is the symptom most associated with GAD, the MCQ-30 may not adequately identify metacognitive beliefs in social phobia. Particular attention to this disorder bias for the MCQ-30 is needed in future studies in order to define the role that metacognitions play in the maintenance of psychological disorders other than GAD.

The present study has several limitations. Firstly, a reliance on correlational relationships means causal relationships between symptom changes, metacognitive beliefs, and thought control strategies following CBGT, cannot be identified. Improvements in anxious or depressive symptoms may instigate improvement in the use of metacognitions and adaptive mental control strategies, not the reverse. Future studies could go beyond the measurement of pre- to post-treatment change, and use repeated measurements during ongoing treatment to evaluate how these variables shift.

A further limitation is related to the design of this study. The pre-post test design utilised in this study allows for inferences to be made on the effect of the intervention by looking at the difference in the pre-test and post-test results. However, interpreting the pre-test and post-test difference should be done with caution since there is uncertainty with regards to the differences in symptoms and the thought control strategies and other indices of control being causally related to the intervention as a result of the lack of a control group. Due to these threats to the validity of these findings it is difficult to dismiss rival hypotheses
or explanations and caution in interpreting and generalising the results from this study must be made.

An extension of the present study could involve the inclusion of additional measures of social anxiety symptoms. Despite FNE being characteristic of social phobia, other self-report cognitive measures of social anxiety may produce different results. For example as opposed to using the FNES (Watson & Friend, 1969), one could use the BFNES (M.R. Leary, 1983) in future research so as to determine whether this alters the results from the present study. Additionally, the reliance of this study upon self-report measurement, the restrictiveness of an overt means of data collection, and self-report biases and social desirability, may have contributed to inaccuracies in the collected data. Unfortunately few objective measures of thought control and metacognitions are available. Only one objective means of measuring thought suppression exists (Page et al., 2005), and this has been incorporated into the research described in Chapter Four. Replication of the present study using a larger clinical sample is warranted. In addition, further investigation of the different mental control strategies and metacognitive responding across clinical disorders would be useful.

Typically, analyses of distraction and thought suppression have assumed that it is an ineffective and counter-productive mental control strategy when used by people with anxious psychopathology. However, the observation that people with social anxiety use distraction without an associated increase in FNE implies that distraction is not as counter-productive as has been suggested. Thus, when a person with social anxiety is confronted with a socially-threatening stimulus, the impact of such a situation upon them may be ameliorated in the short term if they are able to distract themselves from the stimulus. This does not mean that distraction should be openly advocated as a mental control strategy to individuals with social phobia who are attempting to engage in anxiety-provoking situations. Clark (2011b) argues that cognitive avoidance (including the use of distraction) is unhelpful in that despite
affording transitory reprieve from distress and fear, it perpetuates and maintains the strength of anxious thoughts in the future. Consequently, it is important for clinicians working with individuals with social phobia to adequately assess the role that mental control strategies play in the maintenance of the clients’ disorder. The focus on the mental control strategies assists the therapist in understanding their clients’ intentions in using these strategies, in addition to assisting their patients to better understand why they have successfully avoided feared outcomes previously.

The present study demonstrated that those with social phobia exhibit increased application of adaptive and decreases in maladaptive mental control strategies following CBGT. Additionally, there was lack of change of ‘distraction’ following treatment. One of the strengths of the TCQ is that it advances the identification of specific thought control strategies used by individuals with social phobia as detailed in the previous chapter and the current study. Yet this self-report measure does not allow for the identification of cognitive mechanisms in operation during mental control and the specific thought content that is the target of such. In light of this, the Online Thought Suppression paradigm (OTSP; Page et al., 2005) was utilised in Studies Three and Four. The OTSP measures the underlying mechanisms hypothesised to occur during attempted thought suppression (distraction). Hence, the next chapter, and associated two studies, are aimed at exploring this mental control strategy and better understanding why individuals with social phobia demonstrated lack of change for this strategy following CBGT in the present chapter.
Chapter 4: Studies Three and Four

4.1. Rationale

One of the findings from the preceding chapter was that following CBGT, individuals with social phobia demonstrated a lack of change in the use of the distraction mental control strategy. The lack of change for distraction requires further investigation as Wegner and colleagues (1987) propose that distraction represents one of the key strategies by which suppression from unwanted thoughts is attempted. As detailed in Chapter Two and Three, the TCQ aids in examining distraction, yet this self-report measure does not allow for investigation of underlying processes at work whilst an individual is attempting thought suppression. The current chapter will detail previously published findings (Kingsep & Page, 2010) across two studies using an online thought suppression paradigm which measures the underlying processes occurring during attempted distraction from social threat stimuli. These two studies will assist in better understanding the lack of change in distraction following CBGT as evidenced in the previous chapter.

4.2. Introduction

Social phobia is associated with a constellation of symptoms including anxious or self-defeating thoughts, behavioural avoidance, functional impairment, and recognition that one’s fear and avoidance are unreasonable (American Psychiatric Association, 1994). The concern about receiving a negative evaluation from other people represents a hallmark of the disorder. The focus on negative interpersonal evaluation appears to arise in part from an attentional bias that favours the processing of socially threatening information (e.g. Heimberg & Becker, 2002; Holle et al., 1997). However, when socially anxious people engage with socially threatening information, how do they disengage from threat-related thoughts?

Cognitive avoidance can be used as a potential means for controlling unwanted, negative cognitions. One type of cognitive avoidance, namely ‘thought suppression,’
involves conscious attempts to remove intrusive cognitions from conscious awareness. This was first investigated experimentally by Wegner, Schneider, Carter, & White (1987) who found that engaging in thought suppression generated both “immediate enhancement” of to-be-suppressed material as well as a “rebound effect” in which the target material was more available once suppression ceased. Wegner (1994) formulated ‘ironic process theory’ to explain the seemingly paradoxical finding that suppression increased the availability of to-be-suppressed material. This theory describes two processes that work in concert: an intentional conscious operator which diverts attention from unwanted thoughts; and an unconscious monitor which searches for failures in thought suppression and responds to detection of an unwanted thought by triggering the conscious operator.

Applying these concepts to social phobia, cognitive models suggest that individuals with social phobia become preoccupied with negative social evaluative thoughts and that they have difficulty disengaging from these unwanted cognitions (Clark & Wells, 1995; Rapee & Heimberg, 1997). Therefore, one hypothesis of this study is that these individuals will attend to social threat self-related thoughts, but will fail to suppress these thoughts successfully when asked to do so. However, to what extent does the literature support this hypothesis?

Fehm and Margraf (2002) found that when utilising thought suppression, individuals with social phobia demonstrated a general deficit in their ability to suppress thoughts such that both social anxiety and non-social anxiety specific statements were difficult to suppress. Other researchers have found that high socially anxious individuals may actually suppress more successfully when anticipating a social threat than when not anticipating a threat (Cougle, Smits, Powers, Lee, & Telch, 2005). Despite Cougle and colleagues’ finding not being consistent with theories of social anxiety, in that they show lack of paradoxical effects, they appear consistent with a competing account, namely Gilbert and Trower’s (2001) evolutionary process model.
Gilbert and Trower (2001) proposed that socially anxious people focus on damage-limiting self-presentations rather than acquisitive ones. These damage limiting behaviours include ‘safety behaviours’ (e.g. Clark & Wells, 1995; Rapee & Heimberg, 1997) and “inhibitions of thought” or thought suppression. Although individuals with heightened levels of social anxiety may see such actions as “safe”, they may serve to maintain the anxiety. According to Gilbert and Trower, individuals with heightened levels of social anxiety characterise social relationships as being “ranked and hierarchical”. As a result of assuming an inferior position relative to others (M. R. Leary & Kowalski, 1995), yet wanting to impress others, a ‘double bind’ occurs. Based on Gilbert and Trower’s model, it is hypothesised that individuals with social phobia will attend to social-threat self-related thoughts, but because of wanting to impress, will successfully suppress the thoughts when asked to do so. For individuals who do not suffer from social phobia, such indications of social threat may be attended to and strategically processed as opposed to suppressed thereby facilitating adaptive social competence.

The Fehm and Margraf (2002) and Cougle et al.’s (2005) studies present seemingly competing data regarding whether individuals with heightened levels of social anxiety demonstrate a general deficit in thought suppression or rather exhibit ‘successful’ suppression of unwanted cognitions. Both of these studies used overt measurement of target thought frequency, thereby clouding the results by mixing the ‘monitoring’ of unwanted thought frequency and ‘suppression effects’ (Abramowitz, Tolin, et al., 2001).

One experimental protocol that would be useful in testing whether individuals with social phobia demonstrate a general difficulty in thought suppression or ‘successfully suppress’ social threat stimuli, is the “online thought suppression paradigm” (OTSP: Page et al., 2005). In this paradigm, participants concentrate on or suppress a particular word or semantic category. This is followed by a very brief presentation of a word from the to-be-
suppressed category, whereby conscious processing of its semantic content is unlikely. This brief presentation (described as an analogue intrusion) is designed to experimentally model a *failure* in suppression, where the automatic monitor detects an occurrence of the to-be-suppressed content without drawing the participant’s conscious attention to the occurrence of the word. The analogue intrusion is intended to provide the unconscious monitor indications that thought suppression is failing, subsequently prompting the conscious operator into action. The third component of the experimental paradigm involves assessing the extent to which the semantic information is activated, reflected by the time that it takes to name aloud a target word (Forster & Chambers, 1973). Shorter naming latencies indicate greater accessibility of the semantic content. This covert means of measuring thought activation assists in deciding between the competing results presented by Fehm and Margraf (2002) and Cougle and colleagues’ (2005) findings. The OTSP experiment is then structured such that the time between the presentation of the intrusion and the target word to be named varies. Based on Neely (1977), this time gap is either a short stimulus onset asynchrony (SOA; 150ms), such that only the unconscious monitor is operating, or a long SOA (2000ms) permitting recruitment of conscious processes.

Among the studies performed by Page et al. (2005), the online measure of automatic and strategic processes provided support for Wegner’s (1994) ironic process theory. In terms of the thought suppression literature, the Page et al. results contrast with other studies, not in terms of the pattern of results, but rather in terms of *when* and *what* data are collected. That is, this paradigm avoids retrospective reporting (and any inherent biases) that have been used in a number of previous thought suppression studies. Additionally, the OTSP arguably allows for direct manipulation of analogue intrusions. Therefore, it provides a useful method to investigate the processes associated with the mechanism of thought suppression in people with social phobia.
The present paper reports the outcomes of two studies. The studies aimed to examine thought suppression with specific emphasis on the mental control of social threat stimuli by individuals with social phobia and those that do not exhibit the disorder. The objective was to better understand automatic and strategic processes at work within the mechanism of thought suppression. The characteristics of this task were optimised by (1) instructing participants to suppress or concentrate on social threat and general stimuli (‘sport’ material), and (2) comparing such results across different participant groups (Study 1: university sample; Study 2: individuals with social phobia and control participants).

In terms of the hypotheses for the first study, the first hypothesis, consistent with ironic process theory and the findings from Page et al. (2005), is that during suppression of and following an intrusion of social threat stimuli, facilitation of social threat stimuli at a short SOA with reduced activation at the long SOA will occur. Although the negative stimuli used in Page et al.’s study were general negative affective items and not social threat items as used in the present study, it was assumed that a similar pattern of results would occur. The second hypothesis is that for ‘sport stimuli’, heightened activation of such stimuli at the short SOA, yet successful suppression of this information at the long SOA will occur. This would be evidenced by reduced activation of this stimuli at the long SOA.

4.3. Method

4.3.1. Participants. The participants for this study consisted of 40 introductory psychology students who received course credit for participation. All participants were female with a mean age of 21.1 (SD = 5.79). Participants in this study did not evidence a mental disorder based on the results of the administration of a structured diagnostic interview. The Mini International Neuropsychiatric Interview (Mini International Neuropsychiatric Interview, MINI Version 5.0, Sheehan et al., 2001) was conducted with all participants to ensure the non-existence of axis one diagnoses. The MINI generates both DSM-IV and ICD-
10 criteria, with good inter-rater and test–retest reliability (Sheehan et al., 1997). Despite its relative brevity, the validity of the MINI demonstrates good convergent validity with other structured diagnostic instruments (Lecrubier et al., 1997; Sheehan et al., 1997).

4.3.2. Materials. The BDI-II, FNES and SPS and SIAS were administered as part of the study and these measures are described in Section 2.2.3. of this dissertation:

**Beck Depression Inventory - II (Beck et al., 1996).** The reliability and validity of the BDI-II have been well established, with a test–retest reliability coefficient of .93 and Cronbach’s alpha coefficient of .86. In the current study, the Cronbach alpha coefficient was .85.

**Fear of Negative Evaluation Scale (FNES; Watson & Friend, 1969).** The FNES has demonstrated internal consistency ranging from .94 to .96 (Watson & Friend, 1969). For the current study, the Cronbach alpha coefficient for the FNE is = .83.

**Social Phobia and Social Interaction Anxiety Scales (SPS, SIAS; Mattick & Clarke, 1998).** Mattick and Clarke (1998) report that the internal consistencies for the SPS are (Cronbach alpha = .89) and SIAS (Cronbach alpha = .93). In the current study, the Cronbach alpha coefficient are for the SPS (= .85) and the SIAS (= .90).

In terms of the questionnaires administered, the following data was collected: mean BDI of 11.33 (SD = 9.38), FNE of 15.25 (SD = 7.96), SIAS of 22.38 (SD = 12.93), and SPS of 15.83 (SD = 11.08). Although participants in this study were not currently diagnosed with an axis one psychological disorder, the results of the aforementioned questionnaires were used to compare groups across studies in this paper. Additionally, other self-report questionnaires were administered to participants, yet these results are reported elsewhere because they are a component of a different study.
4.3.3. Procedure. Participants attended two sessions. During the first session, they were assessed for their suitability for the study. The assessment included a diagnostic interview and the completion of psychometric questionnaires. In the second session, participants completed the online thought control task.

A total of 64 words from the category of social threat (e.g., rejected, inferior) which were taken from published studies using emotional stimuli (Asmundson & Stein, 1994; MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002) and a semantically unrelated category (sport words - e.g., golf, tennis) of words made up the target word pool. These sport words were taken from Page et al’s Study 2 (Page et al., 2005). All test stimuli were selected and matched on frequency and word length (Kucera & Francis, 1969). An independent sample of 10 clinical psychologists rated emotional valence of selected words. Ratings were measured on a 7-point Likert scale ranging from negative 3 (highly negative in emotional valence) to positive 3 (highly positive in emotional valence). The average scores for negative social threat, and sport words were -2.07 and 0.35, respectively. Social threat and sport words differed in the absolute value of emotional valence ratings [$t(8) = 251.62, p<.001$].

Participants were seated before an Archimedes A3000 computer (Acorn, Cambridge, England) in a quiet room with a voice key linked to a throat microphone and calibrated for each participant in the experiment. On each trial, an instruction (to suppress or concentrate) was presented on the centre of the screen for 2500 ms simultaneously with the prime word (social threat or sport word). For the long SOA trials and half of the short SOA trials, the screen remained blank for 3000ms following the removal of the instructions. During this time, participants continued to follow the instruction (suppress or concentrate). This was followed by a 30 ms presentation of a pattern masked word (the analogue thought intrusion). Following this, a target word was presented, which was separated from the analogue thought intrusion by either 150 ms (short SOA) or 2000 ms (long SOA).
trials, additional 1850 ms of time was added before presenting the analogue intrusion to match the long SOA trials in total duration. Participants named the target word as quickly as possible, with reaction time to these stimuli representing the dependent variable. The target word disappeared from the screen as soon as participants named the word. The next trial began 1000 ms following the previous trial. Once participants had completed 60 trials, they were provided with a brief break and the experiment was repeated in order to generate 120 trials in total.

Following each trial, participants rated their perceived success at suppressing or concentrating on a 0-9 scale with ‘0’ representing “no success” and ‘9’ “total success”. After completing this experiment, participants were debriefed as to the actual purpose of the study.

4.3.4. Design. The study included five within-groups factors (instruction: suppress vs. concentrate; content: social threat vs. sport category; nature of intrusion: ‘reject’ vs. ’skiing’; latency duration between intrusion and target word: short – 150 msec vs. long – 2000 msec; target word: social threat vs. sport). Data were analysed using repeated measures analysis of variance (ANOVA).

4.4. Results and Discussion

4.4.1. Subjective ratings of thought control. After each trial, participants rated how successful they believed they were at suppressing or concentrating on the content for that trial. All participants perceived greater success at concentrating ($M = 7.21, SD = .92$) than suppressing thoughts ($M = 5.59, SD = 1.42$); $t (39) = 7.56, p < .001$. In general, participants rated their ability to control thoughts as moderately high ($M = 6.40$).

4.4.2. Word Naming Latencies. Outlying data points were eliminated by excluding response latencies that were less than 300 ms or greater than 3,000 ms (1% of the response latencies). The mean reaction times (RTs) were calculated for each participant and condition, and entered into a 2 (Instruction: suppress vs concentrate) X 2 (Content: social threat vs sport
category) X 2 (Nature of Intrusion: ‘reject’ vs ‘skiing’) X 2 (SOA: short or long) X 2 (Target word: social threat vs sport category) repeated measures ANOVA (see Table 1). The ‘Nature of Intrusion’ factor was not included in Table 4-1. This was to simplify the presentation of information, such that data was displayed only when an ‘intrusion’ occurred and thought suppression was subsequently initiated.

Table 4-1
Mean Response Latencies (in msec)

<table>
<thead>
<tr>
<th></th>
<th>Short SOA</th>
<th></th>
<th>Long SOA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Suppression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social target</td>
<td>563</td>
<td>96</td>
<td>593</td>
<td>81</td>
</tr>
<tr>
<td>Sport target</td>
<td>570</td>
<td>77</td>
<td>558</td>
<td>90</td>
</tr>
<tr>
<td>Sport content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social target</td>
<td>620</td>
<td>102</td>
<td>605</td>
<td>105</td>
</tr>
<tr>
<td>Sport target</td>
<td>557</td>
<td>100</td>
<td>593</td>
<td>110</td>
</tr>
<tr>
<td><strong>Concentration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social target</td>
<td>620</td>
<td>105</td>
<td>590</td>
<td>97</td>
</tr>
<tr>
<td>Sport target</td>
<td>583</td>
<td>85</td>
<td>564</td>
<td>104</td>
</tr>
<tr>
<td>Sport content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social target</td>
<td>656</td>
<td>130</td>
<td>621</td>
<td>123</td>
</tr>
<tr>
<td>Sport target</td>
<td>553</td>
<td>91</td>
<td>598</td>
<td>102</td>
</tr>
</tbody>
</table>

Note: Conditions displayed are when intrusion is a ‘failure’

The 5-way interaction was significant, $F(1, 39) = 4.83$, $\eta^2 = .11$, $p = .034$. To clarify the pattern of data, this interaction was broken down into a series of subsequent steps. First, we examined the 4-way Instruction X Intrusion X SOA X Target Word for each level of
content. Ironic process theory does not predict that the processes involved in concentration and suppression should vary with the content; therefore, it was surprising to find a significant interaction \([F(1,39) = 15.53, \eta^2 = .29 \ p < .001]\) for sport content, yet not so for social threat stimuli \([F(1,39) = .667, \eta^2 = .02, \ p = .419]\). That is, ironic effects were not found for the social threat stimuli, but they were evident for sport stimuli, suggesting that the processes involved are different for ‘sport’ and ‘social threat’ content. This unexpected result is addressed in Study 4.

To understand better the significant four-way simple interaction for sport content, this effect was further broken down into Intrusion X SOA X Target word interaction for each Instruction type. The rationale was to determine whether instruction had differential effects on the naming latency for sport content. The analysis revealed that the interaction was significant when participants were asked to suppress \([F(1,39) = 4.45, \eta^2 = .10 \ p = .041]\) and concentrate on sport content \([F(1,39) = 11.26, \eta^2 = .22 \ p = .002]\). That is, there was evidence for ironic processes during both suppression and concentration of sport content. Page et al’s (2005) results, using a methodology similar to the present study and the predictions of Wenzlaff and Bates (2000), suggest that the patterns predicted by ironic process theory would be evident during suppression but not concentration, yet the present study suggests that these effects are present for both instruction conditions. Although Wegner (1994) predicted opposite effects for these two instruction conditions the effects were in the same direction. This was evidenced by a decrease in response latency from short to long SOAs for sport stimuli across both instruction conditions.

The next step was to understand the influence of the intrusion on the aforementioned results. As both suppression and concentration of sport stimuli were significant, it was necessary to examine the SOA X Target interaction for sport stimuli during instances in which the intrusion is consistent and not consistent with the desired mental state. This is
important as ironic process theory proposes that the unconscious monitor searches for indications of mental “control failure”. When suppressing sport content while the intrusion was sport-related (i.e., “inconsistent”), the interaction was significant \[ F(1,39) = 5.52, \eta^2 = .12 p = .024 \], but not so when the intrusion was consistent with the desired state \[ F(1,39) = .285, \eta^2 = .007, p = .597 \]. When attempting to concentrate on sport stimuli while the intrusion was inconsistent with the desired state (i.e. the intrusion was a social threat word), the interaction was significant \[ F(1,39) = 11.755, \eta^2 = .23 p = .001 \]. This was not the case when the intrusion was consistent with the desired state \[ F(1,39) = 1.027, \eta^2 = .03, p = .317 \]. Thus, when the analogue intrusion was an indication of a ‘control failure’, the interaction was significant for both suppression and concentration of sport stimuli, yet not so when it was consistent with the desired state. This finding supports Wegner’s (1994) proposed role of mental control failures (unwanted intrusion) and Page et al’s (2005) findings suggesting that mental control is unlikely to be initiated if such control is already successful.

As Figure 4-1 demonstrates, when individuals suppressed sport stimuli which was followed by a sport intrusion, they were significantly faster in identifying the sport stimuli at the short SOA relative to the social threat words \[ F(1,39) = 14.569, \eta^2 = .27, p < .001 \]. This was followed by significant slowing of RT for the sport stimuli at the long SOA \[ F(1,39) = 6.64, \eta^2 = .15, p < .001 \].
4.5. Study 4: Introduction

The aim of Study 3 was to demonstrate the utility of the Page et al.’s (2005) paradigm and to improve the understanding of how individuals without axis one mental disorders process social threat stimuli during thought suppression. The Study 3 hypotheses were partially supported. The results were consistent with ironic process theory only whilst individuals attempted to suppress ‘sport stimuli’. The same was not true during the attempted suppression of social threat words following an intrusion. The findings from Page et al.’s (2005) study that used psychology students as participants, were contrary to this result. Page and colleagues found that suppression of negative content led to an increased activation of content at the short SOA (relative to positive content) followed by a reduction in activation at the long SOA. Although the present study’s results for social threat stimuli was puzzling at first and contrary to what was expected, individuals’ discrimination between ‘general’ and ‘social threat’ stimuli may hold the key to understanding this result. This important point is addressed in the general discussion.
Study 4 was designed to understand better the operation of the mental control strategy of suppression in individuals with social phobia relative to controls as well as to understand Study 1 findings better. Based on Gilbert and Trower’s (2001) evolutionary process model and the process of damage limitation, it is hypothesised that individuals with social phobia will engage in ‘successful suppression’ during processing of social threat stimuli. This would be evidenced by the reduced activation at the long SOA (i.e., when the conscious operator is able to function) for social threat stimuli relative to activation of same at the short SOA when instructed to suppress this stimuli. The second hypothesis is that the control group, who do not indicate clinical levels of social anxiety will demonstrate similar results as found in Study 3 during the instruction to suppress social threat stimuli. When compared to individuals with social phobia, despite being instructed to suppress social threat stimuli, control participants will not evidence a decrease in activation of this stimuli at the long SOA relative to the short SOA.

4.6. Method

4.6.1. Participants. The social phobic participant group consisted of 22 individuals (16 male, 6 female; mean age = 31.68, $SD = 9.94$) who met the DSM –IV criteria for social phobia based on the administration of a semi-structured interview conducted by one of the study’s authors (P.K.) using the MINI. The participants with social phobia were applying for the social phobia treatment programme at a public outpatient mental health clinic (Centre for Clinical Interventions). All participants indicated that social phobia was their primary difficulty at the time of assessment. Eighty-six percent had at least one comorbid Axis 1 disorder and 26% had two comorbid disorders. Forty-five percent met criteria for major depression, 36% for dysthymia, 18% for generalised anxiety disorder, 9% for panic disorder and 5% for obsessive compulsive disorder. The control subjects were comprised of age and gender matched hospital employees. The control group consisted of 22 participants
(16 male, 6 female; mean age = 29.55 years, SD = 11.29) with no known history of psychological disorders. The age difference between social phobic participants and the control group participants was non-significant [F(1,43) = 0.44, p = .509]. Despite there being no significant age difference between groups for this study, it is important to note that for general prevalence rates across genders, there is a relatively equal split of individuals who present with social phobia for treatment (Rapee & Spence, 2004). As such, it is important to take this into consideration when contemplating the generalisability of this study’s findings.

Table 4-2 summarises information about these groups.

Table 4-2
Characteristics of participants in each group

<table>
<thead>
<tr>
<th></th>
<th>Social Phobics (n =22)</th>
<th>Controls (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>31.68 (9.94)</td>
<td>29.55 (11.29)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female (%)</td>
<td>27.3</td>
<td>27.3</td>
</tr>
<tr>
<td>Male (%)</td>
<td>72.7</td>
<td>72.7</td>
</tr>
<tr>
<td><strong>Questionnaire</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI</td>
<td>16.09 (11.40)</td>
<td>8.09 (7.70) **</td>
</tr>
<tr>
<td>FNE</td>
<td>25.73 (3.55)</td>
<td>12.32 (8.63) **</td>
</tr>
<tr>
<td>SIAS</td>
<td>51.18 (14.53)</td>
<td>19.64 (11.37) **</td>
</tr>
<tr>
<td>SPS</td>
<td>38.27 (15.00)</td>
<td>11.73 (12.01) **</td>
</tr>
</tbody>
</table>

Note: Standard deviations appear in parentheses. ** p < .01: Beck Depression Inventory-2 (BDI); Fear of Negative Evaluation (FNE); Social Interaction Scale (SIAS); Social Phobia Scale (SPS);
4.6.2. **Materials.** The same self-report measures as completed by Study 3 participants were completed in this study. This included the Beck Depression Inventory - II (BDI-II; Beck et al., 1996), the Fear of Negative Evaluation Scale (FNES; Watson & Friend, 1969), and the Social Phobia and Social Interaction Anxiety Scales (SPS/SIAS; Mattick & Clarke, 1998).

4.6.3 **Procedure.** The procedure for Study 4 was identical to Study 3.

4.6.4. **Design.** The study included one between-groups factor (*Diagnosis*: social phobic patients vs control group participants) and five within-groups factors (*Instruction*: suppress vs concentrate; *Content*: social threat vs sport category; *Nature of Intrusion*: ‘reject’ vs ‘skiing’; *Latency Duration* between intrusion and target word: short – 150 msec vs long – 2000 msec; *Target Word*: social threat vs sport category). Data were analysed using repeated measures analysis of variance (ANOVA).

4.7. **Results**

4.7.1. **Data Preparation.** The raw RT latency data was trimmed in two steps. The data for three (one social phobic) participants were unable to be included in the analyses due to problems with recording reliable responses. The final data set is reported in Table 4.3. For each participant, individual trial times, detection times over 3000 ms and under 300 ms were removed first, and then RTs that fell outside three standard deviations were eliminated. Means were calculated on the remaining data.

4.7.2. **Subjective ratings of thought control.** Following each trial, participants rated how successful they believed they were at suppressing or concentrating on the content for that trial. Social phobic participants rated themselves just as successful at controlling thoughts (*M* = 6.54) as the control participants (*M* = 7.17) [*F*(1,42) = 3.54, *η*² = .078, *p* = .067]. All participants perceived greater success at concentrating (*M* = 7.29) than suppressing (*M* = 6.41); [*F*(1,43) = 18.724, *η*² = .303, *p* < .001]. Interestingly, there was a lack of
significance between participant groups on their perception of control during concentration \(F(1, 42 = 3.15 \, \eta^2 = .07, \, p = .083\) and suppression \(F(1, 42 = 2.27, \, \eta^2 = .051, \, p = .139\). As is discussed further on, subjective account of control differs from the RT analyses.

### 4.7.3. Word Naming Latencies.

The mean RTs were calculated for each participant and condition, and entered into a 2 (Diagnosis: social phobic patients vs control group participants) X 2(Instruction: suppress vs concentrate) X 2 (Content: social threat vs sport category) X 2 (Nature of Intrusion: ‘reject’ vs ‘skiing’) X 2 (SOA: short or long) X 2 (Target Word: social threat vs sport category) mixed design ANOVA (Table 4-3).

<table>
<thead>
<tr>
<th></th>
<th>Short SOA</th>
<th>Long SOA</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP</td>
<td>Controls</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td><strong>Suppression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social target</td>
<td>587</td>
<td>83</td>
</tr>
<tr>
<td>Sport target</td>
<td>660</td>
<td>161</td>
</tr>
<tr>
<td>Sport content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social target</td>
<td>664</td>
<td>91</td>
</tr>
<tr>
<td>Sport target</td>
<td>619</td>
<td>112</td>
</tr>
</tbody>
</table>

The 6-way interaction was not significant \(F(1,42) = 1.92, \, \eta^2 = .04, \, p = .174\). Although not significant, the 5-way interaction was significant \(F (1,42) = 4.42, \, n^2 = .10, \, p = \)
in which the data was collapsed over only the ‘suppression’ instruction data. Main effects for Diagnosis \( F(1,42) = 4.06, \eta^2 = .09, p = .036 \), Content \( F(1,42) = 20.64, \eta^2 = .33, p < .001 \), Intrusion \( F(1,42) = 4.54, \eta^2 = .10, p = .0405 \) and Target \( F(1,42) = 2.39, \eta^2 = .35, p < .001 \) were demonstrated. These results were explored by conducting separate Group X Intrusion X SOA X Target repeated measure ANOVAs on negative social and sport prime conditions. For suppression of sport primes, there was lack of significance \( F(1,42) = 0.89, \eta^2 = .02, p = .350 \), yet for the social threat primes significance was evident \( F(1,42) = 4.40, \eta^2 = .10, p = .042 \). As expected, individuals with social phobia and control participants differ in the manner in which social threat stimuli is suppressed, although further analysis is necessary.

The next step was to understand the degree to which the nature of the intrusion influenced the participant’s responses. This was to test Wegner’s (1994) prediction that the effects described in ironic process theory would be apparent consequent to the occurrence of thoughts conflicting with a desired cognitive state. A Group X SOA X Target analysis was conducted at each level of the nature of the intrusion. When the intrusion was consistent with the desired mental state, the interaction was not significant \( F(1,42) = .20, \eta^2 = .005, p = .660 \), yet when the intrusion was inconsistent with the desired mental state, the interaction was significant \( F(1,42) = 15.63, \eta^2 = .27, p < .001 \). This result is consistent with Study 3 and the predictions of ironic process theory. Additionally these results concur with Page et al. (2005), in that during suppression a controlled process is deployed that activates alternatives (sport stimuli in this case) to the to-be-suppressed information once an indication of failure is identified by the unconscious monitor.

To clarify the significant three-way interaction, which is illustrated in Fig.4-2, separate repeated measures ANOVAs were carried out for each group of participants. For the social phobic participants, there was a significant SOA X Target interaction \( F(1,21) = 27.13, \eta^2 = .042 \)
.56, p < .001], although this interaction was not significant for the control participants \([F(1,22) = .036, \eta^2 = .002, p = .851]\). Thus, interestingly, social phobics were successfully suppressing social threat information, whilst control group participants did not demonstrate relative activation or deactivation of such information at the long SOA relative to the short SOA.

![Graph showing mean naming latencies of negative social trait and sport target content at short and long SOA's following a negative intrusion when suppressing negative social trait content for Social Phobic and Control group participants.]

4.8. General Discussion

Experientially avoidant behaviours, such as thought suppression, can have maladaptive psychological consequences, and may be at the core of much psychopathology (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Specific to social phobia, two significant issues require clarification. First, it is undecided whether individuals with social phobia demonstrate a general deficit in thought suppression or whether this deficit is more specific to
social threat stimuli. Secondly, it is unclear whether individuals with social phobia in comparison to individuals not exhibiting this disorder process social threat stimuli differentially following the instruction to suppress. The use of the OTSP and associated measurement of ‘thought activation’ provide a means of examining the automatic and controlled processes associated with thought suppression. Study 3 and 4 showed that, individuals without mental disorders demonstrated efficacious suppression except when attending to social-threat thoughts. Conversely, individuals with social phobia demonstrated automatic attendance to social-threat stimuli, yet ‘successfully’ suppressed these words when instructed to do so.

Study 3 explored the operation of automatic and strategic processes during suppression of social threat stimuli in comparison to non-negative stimuli (‘sport’ words). According to our first hypothesis, it was expected that participants would demonstrate facilitation of social threat stimuli at a short SOA with reduced activation at the long SOA. However, this was not the case as the Instruction x Intrusion x SOA x Target Word interaction for social threat stimuli was not significant. Although puzzling and contrary to what was expected, it may point to the importance of an individual’s cognitive relationship with such stimuli and what Baumeister and Leary (1995) call a “need to belong”. These authors go on to describe, “that human beings are fundamentally and pervasively motivated by a need to belong, that is, by a strong desire to form and maintain enduring interpersonal attachments” (p. 522). Gilbert and Trower (2001) lend further weight by stating, “[t]o be approved of, liked, valued, or esteemed by others is probably one of the most powerful of social motives” (p. 262). The lack of suppression of social threat information may be critical for appropriate interpersonal interactions. Suppression of this information would likely obstruct the individual’s ability to functionally manage their own self view and others’ perceptions and evaluations of them.
In terms of Wegner’s ironic process theory (1994), the activation of social threat stimuli at the short SOA, may represent subjects heightened automatic awareness of the impact social threat stimuli have on social relationships and in contributing to concerns of potential rejection and devaluation. Yet, at a strategic level of processing, the ‘need to belong’ may contribute to their motivation to not engage in suppression of social threat stimuli. By not engaging in suppression of social threat, this assists in maintaining stable relationships with others, and reducing the likelihood of rejection and exclusion.

For Study 4, the principal aim was to compare suppression in individuals with social phobia relative to controls. As hypothesised, individuals with social phobia demonstrated the ability to ‘effectively’ suppress social threat stimuli as opposed to evidencing the ‘general impairment’ postulated by other researchers (e.g. Fehm & Margraf, 2002). These findings from Study 4 are consistent with two recent studies conducted. Cougle, Smits, Lee, Powers & Telch (2005) found that individuals with high levels of social anxiety who were instructed to suppress a specific ‘negative social outcome’ thought under conditions of heightened anxiety, reported fewer anxious thoughts following suppression than the non-suppression group. Additionally, Magee and Zinbarg’s study (2007) lends support to the present research. These researchers explored whether individuals with heightened levels of social anxiety evidenced patterns consistent with ‘amplification’ of unpleasant thoughts and moods or rather were more so ‘over users’ of thought suppression as a control strategy. Their results support the conclusion that thought suppression contributes to social anxiety difficulties through the increased use of thought suppression rather than through an enhancement of paradoxical effects.

The successful suppression of social threat stimuli by individuals with social phobia is at odds with predictions based on cognitive behaviour models for this disorder (Clark & Wells, 1995; Rapee & Heimberg, 1997) and the notion that individuals with social phobia
will have difficulty disengaging from social threat. However, the present study’s successful suppression by people with social anxiety is supported by Gilbert and Trower (2001) and their evolutionary process model for social anxiety. These authors propose, that individuals with social phobia may become more focused on ‘damage limitation’. That is, the socially anxious individual may become preoccupied with reducing perceptions of social threat by engaging in cognitive avoidance by suppressing social threat activation. A further explanation for why individuals with social phobia suppress social threat stimuli deserves consideration. Amir, McNally, Reimann, Burns, Lorenz and Mullen (1996), reported that the attentional bias in their study was abolished when social phobics were anxious. Perhaps the paradoxical effects of thought suppression would have been found if carried out under conditions of heightened anticipatory anxiety (an anxiety induction condition). This could represent an avenue for future research.

Some caution is in order when interpreting the findings of these two studies. Firstly, the studies may be underpowered as a result of the small sample size (Keppel, 1991). Despite the significant findings, it is important for this research to be replicated by different researchers using a variety of data-collection methods. This includes a replication using the online thought suppression paradigm with a more substantial sample size. Secondly, externally presented instructions to dismiss threatening thoughts are separate from the naturally occurring detection and mental control. As suggested by Wegner (1994), the very act of instructing individuals to suppress thoughts may interfere with the operation of thought suppression. Although participants in this study were not instructed to be more aware of the individual processes, the fact that they were told to suppress threatening thoughts, may have interfered with the results.

A further limitation involves the non-inclusion of a psychiatric control group (e.g., depressed individuals), which potentially limits our ability to speak to the specificity of the
results to social phobia. Despite social phobia being the primary diagnosis, co-morbid diagnoses (e.g., dysthymia, generalised anxiety disorder, panic disorder), may have contributed to the results as well. Finally the non-inclusion of other types of threat (e.g. physical threat words) or positive stimuli limits our ability to conclude that our results are specific to social threat words.

In terms of the clinical implications of this research, a number of important issues deserve comment. For individuals with social phobia, following the instruction to suppress social threat stimuli, the reduced activation of these stimuli at the strategic level of processing may culminate in reduced processing of perceived threatening information thereby contributing to maintenance of anxiety states. Cognitive behavioural interventions can suspend suppression by helping to specifically identify maladaptive thoughts, challenge them and replace them with interpretations that are more realistic. As Beck and Clark (1997) stated, “cognitive therapy…does not teach patients to suppress their ‘involuntary’ anxious thoughts. Rather the cognitive therapist teaches the anxious individual a strategy that emphasizes elaboration and reflection on their threat-related cognitions.” (p. 56). The apparent short term success in suppressing social threat stimuli may inadvertently contribute to a lack of disconfirmation of the objectivity of such information, and persistence or even potential strengthening of such information in social phobia.

The present research raises some important areas for further research. In addition to ‘thought content’ activation, it may also be important to understand better the role of actual discomfort (i.e. anxiety) during mental control attempts. That is, in their quest to block unwanted thoughts, individuals may desire to reduce the high level of anxiety that accompanies social threat stimuli. Some researchers (e.g., Purdon & Clark, 2001) have argued that the discomfort associated with thought suppression should be the target of inquiry in addition to the frequency of thoughts. Evidence for this comes from studies suggesting
that individuals who suppress personally relevant intrusive thoughts are more distressed and experience higher levels of discomfort after doing so (e.g. Trinder & Salkovskis, 1994). The present experiment did not instruct participants to control specifically their moods, but rather to control their mood related thoughts. Thus, although the present research is specific to social threat words, there may be similar applicability to emotional suppression as well.

It would also be worthwhile to investigate whether cognitive behavioural therapy (CBT) which has been shown to be efficacious in treating social phobia in numerous randomised controlled trials (A. C. Butler, Chapman, Forman, & Beck, 2006), effectively target maladaptive mental control strategies such as thought suppression. Future research could also ascertain the specific strategies used by individuals’ when attempting to suppress their unwanted cognitions. This could include the inclusion of the White Bear Suppression Inventory (Wegner & Zanakos, 1994b) so as to examine the differential effects between high and low general suppressors.

In summary, this research demonstrates the utility of the OTSP in both clinical and non-clinical populations. Although suppression has been found to be a potentially important maintaining factor across a variety of clinical disorders, the present methodology would aid in the exploration of the operation of this mental control strategy in other clinical populations. In terms of social phobia, it appears that successful suppression of social threat stimuli, albeit short term, likely contributes to lack of habituation to such triggers, thereby contributing to the maintenance of the disorder. The present research highlights the pattern associated with the non-clinical group across both studies when attempting to suppress social threat stimuli. That is, individuals without social phobia, when instructed to suppress social threat stimuli, engage in a ‘detect and respond’ as opposed to ‘detect and avoid’ style of processing. It is hoped that knowledge from the current study can guide future research and lead to significant clinical implications relevant to the fine-tuning of CBT for social phobia.
Chapter 5: General Discussion

5.1. Overview Of Dissertation

The present dissertation describes a program of research into (i) the mental control strategies used by people with social phobia to manage their intrusive thoughts, (ii) the impact of CBGT on these strategies, and (iii) the specific analysis of automatic and strategic processes during attempted suppression of social threat stimuli relative to individuals without this disorder. The major results were that:

a) individuals with social phobia demonstrated what appears to be effective suppression of social threat stimuli, but healthy control participants did not;

b) individuals with social phobia used worry as a mental control strategy more often than control participants but distraction less often; frequency of use of punishment, reappraisal and social control strategies did not differ between groups;

c) individuals with social phobia who took part in the CBGT increased their use of adaptive cognitive strategies (social control and reappraisal) and decreased their use of maladaptive cognitive strategies (punishment and worry); and

d) all five metacognitions (cognitive confidence, positive beliefs about worry, cognitive self-consciousness, negative beliefs about uncontrollability of thoughts and danger, and beliefs about the need to control thoughts) decreased following CBGT (even though there were only limited associations between metacognitions and symptom change).

These results will now be considered in more detail and their implications outlined.

5.2. Summary of Research Findings

As discussed in the Introductory chapter, a core symptom of social phobia involves the concern of being negatively evaluated by other people. This includes worrying excessively
about doing something embarrassing or acting in a humiliating manner. As these maladaptive thoughts may exacerbate and maintain high levels of social anxiety, the first study explored mental control strategies individuals engage in to control their negative thoughts.

Study One found positive associations between measures of fear of negative evaluation and the WBSI total score as well as the punishment and worry subscales of the TCQ. As the fear of negative evaluation scale measures avoidance of being evaluated, apprehension about receiving negative evaluation and the expectation of being negatively evaluated (Watson & Friend, 1969), the positive correlation with punishment and worry control strategies, indicates that these strategies are dysfunctional in nature.

The results involving distraction in Study One are interesting in that whilst this mental control strategy was negatively associated with quality of life, individuals with social phobia used it significantly less than the control group. One explanation for this result is that individuals with social phobia are adept at using distraction to cognitively avoid social threats, thereby preventing habituation to the feared stimuli to occur (thus explaining associated low quality of life). It may be that individuals with social phobia not only use distraction less often, but that the efficacy of use is higher than the other group. The control group may use distraction more, yet their effectiveness ‘rating’ may be respectively lower than that of the clinical group. Thus, it is hypothesised that these two groups may use distraction differently. Therefore, it was decided to examine distraction in subsequent studies. Furthermore, since thought suppression (as a general thought control strategy) is claimed to involve active distraction from the to-be-suppressed stimulus to another stimulus, studies three and four examined distraction as an instance from this broader class of mental control strategies.

The next step in the research program was to explore metacognitions. One of the findings from Study One revealed that individuals with social phobia evidenced significantly less perceived control of their thoughts than control subjects. This finding draws attention to
the potential role that metacognitions play in the maintenance of recurrent and distressing thoughts in social phobia. The perceived ability to control or suppress unwanted intrusive thoughts is a significant predictor of psychopathology, and metacognitions play an important role in the development and maintenance of psychological disorder (Wells & Cartwright-Hatton, 2004). For Study Two, the uncontrollability/danger metacognition subscale was the only metacognition which shared a relationship with one of the core symptoms associated with social phobia (fear of negative evaluation). Although causality of this relationship is not possible due to this finding be correlational, one interpretation is that worrying thoughts such as fear of negative evaluation persist no matter how the individual attempts to stop them. Additionally, there appears to be a strong perception that it is not possible to ignore these thoughts (FNE). Based on only one of the five metacognitive factors being significantly related with the FNE scale, the results from Study Two, may suggest that metacognitions play a restricted role with regards to distorted thought such as the fear of negative evaluation in social phobia. Although the SIAS was associated with the metacognitions of cognitive self-consciousness and negative beliefs about not controlling thoughts, future research is needed to better understand the role that metacognitions play in the maintenance of social phobia.

Study One provides evidence that maladaptive thought control strategies are used more frequently by individuals with social phobia than control subjects. Hence, the primary purpose of Study Two was to determine whether completion of CBGT is associated with a reduction in maladaptive and an increase in adaptive cognitive strategies. Following their completion of CBGT, individuals with social phobia increased their use of social control and reappraisal and demonstrated reductions for punishment and worry mental control strategies, yet interesting one thought control strategy — distraction — did not change as a result of treatment.
Based on the puzzling result associated with lack of change for distraction in Study Two following CBGT, Study Three and Four were conducted in which an experimental protocol, namely the online thought suppression paradigm (OTSP; Page et al., 2005), was used to better understand this thought suppression strategy. Distraction is important as (Rassin, 2005) suggests that this mental control strategy is seen as the “vehicle behind the paradoxical effect of thought suppression” (p. 3). The OTSP aims to measure the effects of automatic and strategic processes occurring during mental control (Wegner, 1994). Wegner’s ironic process theory argues that initial automatic activation of the to-be-suppressed material will be responded to with a form of distraction in which strategic processes allocate attention to alternative thoughts. Interestingly, for Study Three, the same pattern of results predicted by ironic process theory was not found during attempted suppression of social threat stimuli. Specifically, during ‘attempted’ suppression of social threat stimuli, individuals with no psychiatric diagnosis exhibited activation of social threat stimuli at the short SOA and no significant change in activation at the long SOA. Thus, even though instructed to suppress social threat, non-fearful participants did not seem willing or able to switch their attention to another stimulus. As social threat is of primary concern to individuals with social phobia, a logical extension of Study Three was a replication with inclusion of individuals with a diagnosis of social phobia. This allowed for specific examination of whether individuals with social phobia and those without this disorder process social threat differently.

For Study Four, while the non-psychiatric group demonstrated a similar pattern of results to Study three, individuals with social phobia responded differently. At an automatic level of processing (at the short SOA), individuals with social phobia revealed vigilance for social threat stimuli, yet ‘successfully’ suppressed this stimuli during conscious attention to such (at the long SOA). Study Four in conjunction with Study Three points to the potential role of distraction contributing to maladaptive processing of social threat stimuli for
individuals with social phobia. That is, to the extent that thought suppression involves the shifting of attention from an unwanted thought to another focus that will occupy attention, it can be considered a form of distraction. This finding is important, as individuals with social phobia in Study One indicated that they used distraction significantly more so than other thought control strategies. The findings in Study Four suggest that this group demonstrate differential effectiveness when attempting to distract social threat versus neutral stimuli. It may be that since social threat stimuli is deemed as critical to suppress, more practice and importance is placed on this particular cognitive stimuli, thereby contributing to increased efficacy in suppressing social threat cognitions (albeit in the short-term). To the present author’s knowledge no research has directly measured the activation of stimuli (i.e., social threat stimuli) during attempted thought suppression attempts for individuals diagnosed with social phobia.

Although not addressed in the present thesis, an interesting question is whether there would be differences in the efficacy of suppression, in which study participants are ‘instructed’ to suppress versus ‘naturally encounter’ intrusive thoughts and engaging (or not) in mental control strategies (suppression). The findings from the present studies may point to the idea that individuals with social phobia engage in this mental control strategy as a well-learned strategy that has now become an automatic process. A further interesting research query is to what extent the effect of practicing suppression for non-anxious participants would enhance and contribute to this group using thought suppression at a similar level to that of individuals with social phobia.

5.3. Implications

The present research clarifies the use of mental control strategies in social phobia. In addition, this research has used a methodology to examine the operation of automatic and strategic processes, functioning during attempted distraction of social threat stimuli to better
understand the role of thought suppression in the maintenance of social phobia. The improved comprehension of mental control strategies used by individuals with social phobia to manage unwanted thoughts and the process occurring during use of distraction has implications for clinical settings. In the sections that follow, the theoretical, methodological and applied implications of this research program will be discussed.

5.3.1. Theoretical implications. The present research has served to advance theoretical understandings of social phobia, by improving the measurement of the processes associated with thought suppression. Additionally, as opposed to an influx of unwanted thoughts following suppression attempts, there is instead evidence to suggest suppression of social threat stimuli occurs. The findings bear upon the strength of predictions made by certain models of social phobia and the mechanisms that mediate this link. The findings have implications for understanding the role played by mental control strategies in the development and maintenance of social threat stimuli. The implications will be discussed in the following sections.

5.3.1.1. Distraction – failed habituation. Across Studies One through Four, the results suggest that distraction likely plays a role for individuals with social phobia in the processing of and habituation to social threat stimuli. Study One, which examined the utilisation of thought control strategies in individuals with social phobia in comparison to a control group, found that individuals with social phobia reported using distraction more frequently than other strategies. Study Two, which explored pre-post CBGT change of mental control strategy use and the potential role of metacognitions in social phobia, found that distraction was the only thought control strategy that evidenced lack of change following completion of CBGT. For Study Three, which used an on-line thought suppression paradigm to explore the automatic and strategic processes occurring during instructed distraction with a group with no psychiatric diagnosis, individuals without a psychiatric diagnosis did not evidence ‘successful
distraction’ of social threat stimuli. That is, these study participant’s evidenced lack of suppression of social threat stimuli with no reduction of activation of this stimuli at the long SOA (measurement of conscious processing) relative to the short SOA (unconscious measurement of activation). Study Four demonstrated that when asked to suppress social threat stimuli, individuals with social phobia exhibited ‘successful suppression’ of these stimuli, whilst participants (as in Study three) without a clinical disorder did not. This begs the question, “what role does distraction potentially play in the maintenance of social phobia”?

For individuals with social phobia, the use of distraction as one means of managing social threat stimuli could contribute to a lack of habituation to phobic stimuli. Habituation is the decrease of a response to a repeatedly elicited stimulus that is not due to sensory adaption or motor fatigue (Tryon, 2005). Lang (1979) and Drobes and Lang (1995) described the cognitive and emotional changes produced by exposure therapy as a cognitive-emotional-behavioural network theory described from a bio-informational model. These researchers hypothesised that fear is facilitated by a memory-based network encompassing information about stimulus characteristics, verbal and non-verbal response tendencies, feelings, and propositions about the meaning of these events in different situations. In terms of ‘social fears’, Foa and Kozak (1986) go on to suggest that fears involve memory-based networks of connections called fear structures that incorporate cognitive, perceptual, and behavioural drives. During the activation of a fear network, it is hypothesised by these authors that perception motivates avoidance and escape. Foa and Kozak further discuss the therapeutic idea of emotional processing; explained as the amendment of memory-based fear structures related to feelings, actions and thoughts. Ongoing reduction in emotional responding over time is anticipated to occur based upon (a) recurrent activation of the fear network and (b)
integration of curative fear-incongruent information into the network thereby revising fears associated with negative evaluation.

For example, when physiological activity declines during the course of confronting an anxiety-provoking stimulus (e.g., a feared social presentation), the perceived information associated with such declines are inconsistent with the fear structure. This reduces the strength of association between stimulus (perceived social threat) and response components (e.g., escape or subsequent avoidance). Cognitions concerning the expected ‘fear response’ and the distress that is involved are amended, as are beliefs that the fear will consequently lead to humiliation or embarrassment. What is necessary is for the fear structure itself to be triggered so as to be available for amendment. In keeping with this view, Wegner and colleagues have proposed that chronic suppression of emotionally intense thoughts might thwart habituation to emotional stimuli, thereby contributing to the risk of developing anxiety and depression related thoughts and symptoms (Wegner & Zanakos, 1994b; Wenzlaff & Wegner, 2000). It seems that inasmuch as suppression or distraction may reduce the intensity of exposure therapy (Rodriguez & Craske, 1993), it may equally teach or allow practice in a coping skill (e.g., speaking up’ in a classroom lecture despite fearing being evaluated negatively). When insufficient distinction is made between thoughts best confronted and those that need to be ‘temporarily suppressed’, the maladaptive use of this mental control strategy may be maintained. It is hypothesised that these distinctions are what makes it vital to specify both the healthy and unhealthy uses of distraction with each individual. This rationale will likely safeguard the possibility that distraction and thought suppression are not used as an unproductive avoidance strategy thereby interfering with exposure therapy.

The results of Study Four in which individuals with social phobia demonstrated ‘successful suppression’ of social threat stimuli, albeit short term, could possibly contribute to
lack of habituation to such triggers thereby furthering the maintenance of the social anxiety. Future research could investigate this possibility.

5.3.1.2. Implications for models of social phobia. General cognitive models of anxiety have hypothesised that individuals with heightened levels of anxiety are hypervigilant to the perception of threat (Mogg & Bradley, 1998; Mogg et al., 1997; Williams et al., 1988). Across these models, a common factor is the “specificity hypothesis”. This hypothesis relates to the idea that attention is drawn to stimuli particular to the anxiety disorder in question (‘social threat’ in social phobia). The experimental literature provides support for this view among several anxiety disorders (for reviews, see Bogels & Mansell, 2004). The vigilance-avoidance hypothesis (e.g. Mogg et al., 1997) explains the hypervigilance for threat in further detail. This model proposes that following a hypervigilance for threat, avoidance occurs for that stimulus. During an individual’s confrontation of an anxiety-provoking social situation, there is a preliminary augmented processing of threatening stimuli (e.g. “someone is staring at me”), followed by cognitive avoidance thereby contributing to reduced habituation to this perceived threat. Following this interplay of processes, the ‘threat stimuli’ is hypothesised to continue to elicit a heightened anxiety response and automatically be perceived as threatening.

Whilst the discussion in the preceding paragraph relate to the vigilance-avoidance hypothesis for anxiety disorders, this same theory shares a place in models of social phobia to varying degrees. In the Introductory Chapter, three models of social anxiety/phobia were introduced: the cognitive model proposed by Clark and Wells (1995), the cognitive-behavioural model proposed by Rapee and Heimberg (1997), and the evolutionary process model proposed by Gilbert and Trower (2001). These three models propose subtle differences with regard to the allocation of attentional resources to threat and whether individuals with heightened levels of social anxiety have difficulty in disengaging from perceived social threat. Both the Clark and Wells (1995) and Rapee and Heimberg (1997)
models suggest that individuals with social phobia have difficulty disengaging from social threat. Whilst Gilbert and Trower acknowledge the importance of self-focused attention, they indicate that following “potential social aggression”, individuals with heightened levels of social anxiety engage in damage limitation, thereby contributing to “further engagement of submissive behaviours of eye contact avoidance, inhibitions of thought and behavior, and desires to escape” (p. 270).

The vigilance-avoidance hypothesis is to varying degrees, a component in models of social anxiety (Clark & Wells, 1995; Gilbert & Trower, 2001; Rapee & Heimberg, 1997). Each model maintains that attention is focused on threatening stimuli specific to fear of negative evaluation. For instance, Clark and Wells (1995) highlight that individuals with social phobia redirect their attentional focus onto internal threat stimuli including their physiological response and cognitive concerns of being negatively evaluated. This internalised focus impedes their social performance, restricts the individual’s engagement in adaptive reappraisal of the perceived threat as less threatening and leads to an increase of a ‘felt sense’ (“I look as anxious as I feel”). Additionally, Clark and Wells (1995) hypothesise that attentional avoidance occurs as a safety behaviour, to reduce the experience of unpleasant feelings, thoughts or the risk of feared outcomes. A similar position, as put forth by Rapee and Heimberg (1997), maintains that individuals with social phobia invariably become trapped by a ‘multiple-task paradigm’. This involves individuals with social phobia, “closely monitor[ing] potential external threat and simultaneously monitoring the potentially threat-elicit[ing] aspects of her/his supposed external appearance or behavior, as well as reserving some attentional resources for the proper completion of the task at hand” (p. 746).

On the other hand, Gilbert and Trower (2001) proposed that individuals will initially focus on social threat stimuli (wanting to impress), yet following this attentional focus will suppress these very same thoughts. In their model, this is referred to as ‘damage limitation’.
For Study Three in the dissertation, which used a cognitive paradigm to explore the automatic and strategic processes occurring during instructed distraction, individuals without a psychiatric disorder evidenced non-suppression of social threat stimuli. As such, it was hypothesised that individuals with social phobia in Study Four would effectively suppress social threat stimuli. That is, social threat stimuli would evidence a reduced degree of activation at the long SOA relative to the short SOA. This hypothesis was based on both the results of Study Three and Gilbert and Trower’s proposal that following attentional focus, individuals with social phobia would suppress social threat stimuli as evidenced by diminished activation of these stimuli at the long SOA. As shown by the results of Study Four, which used a cognitive paradigm to explore the automatic and strategic processes during instructed distraction for individuals with social phobia and a non-psychiatric group, individuals with a primary diagnosis of social phobia demonstrated diminished activation of social threat stimuli at the long SOA.

The increased allocation of attentional resources for the detection of social threat is mutually supported across the three models of social anxiety (as detailed in Chapter One) and backed by the experimental literature (see, Bogels & Mansell, 2004). Yet, Rapee and Heimberg (1997) and Clark and Wells (1995) differ from Gilbert and Trower (2001) in terms of whether individuals with heightened levels of social anxiety demonstrate difficulties in disengaging from social threat or they could be described as ‘ineffectual disengagers’. As exemplified by Rapee and Heimberg and supported by Clark and Wells, “individuals with social phobia will scan the environment for any signs of impending negative evaluation, will detect such signs rapidly, and will have difficulty disengaging attention from them “ (p.746). The result from Study Four are consistent with the vigilance – avoidance hypothesis (Mogg et al., 1997) and the social anxiety model put forth by Gilbert and Trower. That is, following instructions to suppress social threat stimuli, individuals with social phobia evidenced
increased activation of these stimuli at the short SOA and decreased activation at the long SOA. This result lends support for the proposition by Gilbert and Trower (2001) for the existence of damage limitation as stated at process four in their model of social anxiety as evidenced by ineffectual disengagement from social threat stimuli in Study Four of this dissertation.

Although using different methodology to that of the OTSP paradigm for Study 3 and 4 or the self-report questionnaire format utilised in Study 1 and 2, the eye-tracking paradigm is one means of examining the role that attentional bias plays in social phobia and other anxiety disorders. The eye tracking methodology measures the fluctuations in attentional deployment over time and does not require the participant to verbally respond. Wieser, Pauli, Weyers, Alpers and Muhlberger (2009) conducted a study with individuals who exhibited low or high FNE and were presented with pictures of happy or angry faces which were matched and paired with neutral facial expressions. These researchers found that individuals with high FNE gazed at emotional faces significantly more than those with neutral expressions. Of most interest specific to the results of the present dissertation, pertains to the time course of attentional deployment shown by the high FNE group. This group focused on the emotional faces longer during the first stage of processing (first 1000 milliseconds), and then engaged in attentional avoidance (by looking away from the stimuli) for the next stage of processing (500 milliseconds). Just as in Study 4 of this dissertation, those with high levels of FNE (individuals with social phobia) attended to the social threat stimuli at the short SOA and subsequently significantly decreased time at the long SOA (avoidance). The findings from Wieser and colleagues suggests that attentional deployment may take different forms in early-versus late-stage information-processing, similar to the results from study four in this dissertation. These findings from Wieser and colleagues support the findings from the
present dissertation and point to the need for further research examining the vigilance-avoidance hypothesis in social phobia.

Clark and Wells (1995) and Rapee and Heimberg’s (1997) models advance the idea that cognitions significantly contribute to the growth and maintenance of social phobia. They suggest that a general treatment goal is to help patients challenge and dispute their maladaptive beliefs and cognitive biases regarding social interactions, which perpetuates their social anxiety. The findings from Study Two, which explored pre-post CBGT change of mental control strategy use and the potential role that metacognitions play in the maintenance of social phobia, provide several points of support for Clark and Wells’ and Rapee and Heimberg’s models. First, individuals completing the CBGT significantly increased their use of adaptive mental control strategies (reappraisal and social control) and evidenced reductions in dysfunctional strategies (worry and punishment). Secondly, decreases in fear of negative evaluation were associated with reduced use of the punishment and worry subscales in the Thought Control Questionnaire (TCQ; Wells & Davies, 1994) and an increase in social control. Although the direction of causality is uncertain, one possibly interpretation is that individuals involved in the CBGT engaged in more discussions with others (the increased use of the social control strategy). Increased social conversations with others, thereby provides for opportunities to decrease their utilisation of self-directed maladaptive control strategies (worry and punishment) with resultant decreases in fear of negative evaluation.

Overall, the findings from the present studies provide support for the role of initial vigilance of attentional focus on social threat stimuli as identified in the models of social phobia, and suggest that CBGT for social phobia contributes to the development of more adaptive mental control strategies and less use of metacognitions. Conversely, individuals with social phobia appeared to disengage from perceived social threat at the long SOA (measuring strategic attention and control) in Study four. Although it is unclear of the
duration of this disengagement from social threat, there is strong evidence in the literature that during the ‘post-event processing stage’ as highlighted by some authors theories (Clark & Wells, 1995; Rapee & Heimberg, 1997), individuals with social phobia continue to think about the social event for quite some time thereafter (Morrison & Heimberg, 2013). Thus it is suggested that individuals with social phobia appear to evidence ‘successful distraction’ from social threat stimuli following their vigilance for such with the final process likely involving post-event-processing. This can be summarised as ‘vigilance-avoidance ‘prolonged cognitive distortion (post-event-processing) which understandably maintains social phobia.

5.3.2. Methodological implications. Central themes of the present research were to better understand the specific mental control strategies used by individuals with social phobia and to examine the functioning of automatic and strategic processes during attempted distraction of social threat stimuli in comparison to control subjects. As such, the first two studies utilised and relied on self-report questionnaires, whereas Studies Three and Four employed an online measure of thought suppression with the inclusion of self-report measures to aid in the exploration of this mental control strategy. The following section discusses the methodological implications of this dissertation.

5.3.2.1. Importance of using both self-report and non-self-report measures. Typically, the main dependent variable in suppression research is the measurement of target thought frequency or more specifically the occurrence of intrusive thoughts. Despite the majority of thought suppression research using this form of measurement, this form of investigation is prone to several potential reporting biases. A primary bias relates to a participants’ inability to monitor and concurrently state their target thoughts due to the rapid occurrence of such and the hypothesised automatic and unconscious processing of stimuli which is occurring. This ‘participant task’ of monitoring and responding may result in an underestimation of intrusion frequency due to the participants likely having difficulty in
completing these two tasks concurrently. Additionally, the very nature of recording or indicating the occurrence of a thought may serve as a ‘retrieval cue’ for the target thought thereby inflating the recorded frequency. That is, chronicling the occurrence of intrusive thoughts may ironically prime the individual to be more vigilant to their very occurrence. Similarly, a propensity to report results in a socially desirable fashion likely contaminates data that rely on self-report questionnaire data (Schwarz, 1999). Yet in a more recent article, Schwarz (2011) suggests that social desirability and the self-presentation editing bias in self-report measures are more likely to occur in face-to-face interviews than during the more confidential circumstances associated with self-administered questionnaires. Thus, there is support for the use of self-report data in the present dissertation.

As previously reported, self-report involves several potential biases, yet this form of data collection still remains a valuable means of data collection for exploring cognitive factors in individuals with social phobia (Heimberg, 1994). As was identified in Studies One and Two, an important step in understanding mental control strategies in social phobia was to better understand the strategies that people believed they used to control one’s unwanted thoughts. Unfortunately, current research and experimental paradigms are not able to provide a more accurate means of identifying these factors outside of self-report. As such, self-report questionnaires such as the Thought Control Questionnaire (TCQ) and the Metacognitions Questionnaire (MCQ) were used in Study One and Two as a means of tapping into these variables.

McNally (2001) raises a number of points which relate to the importance of not restricting data collection associated with clinical phenomena to that of non-self-report means. Firstly, the collection of data which relates to social anxiety phenomena is only possible via self-report. McNally (2001) states, “certain phenomena, such as obsessions, have no outward manifestations other than that revealed in language. Even PET studies of
OCD patients, require one to confirm that the person is, indeed, obsessional in the scanner” (p. 520). In terms of social phobia, self-report questionnaires are at times the only means of identifying clinical symptoms such as the thoughts or mental control strategies utilised by the individual. Although cognitive processing paradigms have been used mostly to examine the nature of social phobia, they have been less frequently used to measure social phobia severity or treatment outcome. Although the application of cognitive processing paradigms for the assessment of social phobia is still a relatively new practice, their use will likely increase our understanding of the nature of social phobia and assess the impact of psychological treatments in the future (Hirsch & Clark, 2004). As Schwartz (1999) states, “Self-reports are a primary source of data in psychology and the social sciences” (p. 93) and at present the best clinical tools available to assess cognitions in social phobia is by directing asking the individual.

Several points have been raised with regards to both strengths and cautions for using self-report measures in the study of thought suppression and mental control. In addition to self-report, Rassin (2005), suggests that, “the thought suppression paradigm would benefit further if suppression were found to have effects other than that on self-reported thought frequency.” (p. 44). So as to more broadly understand the processes hypothesised to be functioning during thought suppression, the Online Thought Suppression Paradigm (OTSP; Page et al., 2005) was used Studies Three and Four of this dissertation. Although the OTSP does not measure target thought frequency, the measurement of ‘thought activation’ both at a conscious and automatic level of processing allows for measurement of processes thought to operate according to ironic process theory (Wegner, 1994). The measurement of thought suppression other than through the use of self-report is not novel, yet the measurement of intrusions and processes associated with thought suppression is uniquely captured utilising the OTSP. Previously, non-self-report measurement in thought suppression research has reported
on findings using; skin conductance levels during thought suppression experimental periods (Wegner, Shortt, Blake, & Page, 1990), word association tasks (Wegner & Erber, 1992), sleep onset latency (Ansfield, Wegner, & Bowser, 1996) as well as the potential effects of thought suppression on the immune system (Petrie, Booth, & Pennebaker, 1998). Although some of these aforementioned studies utilise self-report measurement, what has been demonstrated, is that thought suppression can be measured external to target thought measures. In his review of the literature and the validity of self-report and non-self-report measurement of thought suppression, Rassin (2005) concludes that despite the identified biases inherent in self-report, the paradoxical effect is observed using both forms of measurement. Thus, research that reduces its’ dependence on self-report data can complement research using self-report, and permits collection of data that is not open to the same potential biases associated with conscious recall.

5.3.3. **Applied implications.** Within the literature, there is support for an initial vigilance for social threat stimuli yet models of social phobia do not share similar views regarding whether there is subsequent avoidance or continued attention to such. The present results support the view that avoidance of social threat stimuli, rather than continued vigilance occurs. As a result, the following sections will consider the applied value of the present research for both assessment of adaptive and maladaptive mental control strategies and treatment of social phobia.

5.3.3.1. **Measuring adaptive and maladaptive mental control.** Better understanding the specific thought control cognitive processes associated with thought suppression, will likely assist in clarifying the reasons that individuals with clinical disorders tend to have difficulties in managing maladaptive and unwanted cognitions. The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994a) that was used in Study One measures a general tendency to suppress unwanted negative thoughts. Despite the utility of the WBSI,
distinct limitation is that it does not measure the specific strategies individuals use to suppress intrusive thoughts. In the original study by Wegner and colleagues (Wegner et al., 1987; exp. 2), initial speculation was raised with regards to differing means of controlling thoughts. These authors speculated that unfocused-distraction may have contributed to a greater rebound effect than focused-distraction. Although Wegner and colleagues’ study was limited to these two forms of distraction (and not other mental control strategies as measured by the TCQ), their results from study two suggest that focused distraction may provide for more apparent successful suppression of target stimuli. Wegner and colleagues state, “subjects in a focused-distraction group might defeat a recurrent inclination to think about anything other than white bears by focusing on the single distractor provided them” (p. 11). Thus, the specific technique one uses to control thoughts may contribute to the effectiveness of efforts to manage unwanted thoughts.

To better understand mental control strategies, Wells and Davies (1994) constructed the Thought Control Questionnaire (as detailed in the Introduction to this dissertation). In their study, they contend that suppression “is defined in terms of its goals rather than in terms of the strategy or strategies used to achieve this goal” (p. 871). Although it is important to understand the processes underlying the thought suppression cognitive mechanism, Wells and Davies recommend that specific importance be placed on better understanding the means by which an individual attempts mental control as well. As suppression involves a blocking of information from consciousness it is important to clarify which of the five mental control strategies measured by the TCQ are deemed ‘suppression strategies’. Distraction, worrying, and punishment can be seen as suppression strategies, since they involve an attempt to cognitively avert attention from the unwanted intrusive thoughts. Although there is evidence demonstrating that worry and punishment are positively associated with psychopathology
(McKay & Greisberg, 2002) there is conflicting evidence in the literature as to whether the distraction strategy is also associated in a similar manner (see Rassin, 2005).

The present research sheds light on the role that distraction serves in the maintenance of social phobia and whether this suppression strategy is adaptive or maladaptive. Study One’s examination of specific thought control strategies used by individuals with social phobia in comparison to a healthy control group found that individuals with social phobia, despite using distraction more so than other strategies, used this particular strategy less so than control subjects. This result may suggest that individuals with social phobia are more adept at using this strategy than individuals without the disorder thus explaining the less frequent use in comparison to control subjects. In Study Two, following attendance in CBGT for social phobia, distraction was the only mental control strategy that did not evidence change over the course of treatment. Thus, the CBT strategies learned during the course of treatment did not appear to alter the use of distraction as a mental control strategy, despite the other adaptive strategies increasing and maladaptive ones decreasing. The results for distraction across the two prompted more fine-grained analysis of this mental control strategy using the OTSP so as to better understand its role in the maintenance of social phobia.

The OTSP was utilised to better understand how individuals with social phobia attempt to engage in distraction of social threat stimuli. The results for Study Four examining the operation of automatic and strategic processes functioning during attempted distraction of social threat stimuli suggest a role distraction plays in the maintenance of social phobia. Individuals with social phobia suppressed social threat stimuli, yet the same stimulus was not suppressed by individuals in the control group. Although not conclusive, this lends support for the opinion that individuals with social phobia engage in a pattern of ‘detect and avoid’ when suppressing social threat, yet control subjects follow a ‘detect and process’ style with the same stimuli. For individuals with social phobia, it may be argued that the increased use
of avoidance-related cognitive strategies such as distraction and other suppression strategies limits activation of the fear network and reduces habituation of anxiety and modification of threat-based beliefs. Future research is needed to more explicitly examine this so as to make stronger conclusions.

5.3.3.2. Implications for the treatment of social phobia. The research results presented herein provide some provisional directions for future psychological treatments and programs of research. For Study One, which examined the utilisation of thought control strategies in individuals with social phobia in comparison to a control group, there are several theoretical and clinical implications which deserve consideration. As mentioned in the Introduction to this dissertation, in terms of clinical models of social phobia, cognitive theorists (e.g. Clark & Wells, 1995; Rapee & Heimberg, 1997) propose that an information processing bias contributes to the maintenance of social phobia. More specifically, Mogg, Bradley, de Bono and Painter (1997) proposed the vigilance-avoidance hypothesis in which hyper-vigilance for perceived threat is followed by avoidance. This maladaptive process reduces the opportunity to habituate to or reappraise stimuli as non-threatening. The undue use of worry and punishment control strategies unproductively safeguards misguided interpretations and anxiety associated with maladaptive thoughts. This use of dysfunctional mental control strategies induces increased non-effectual suppression attempts, greater cognitive preoccupation, and increased anxiety. The mixture of maladaptive thought control strategies and behavioural avoidance maintains social anxiety symptoms. As a result of persistent thought suppression effort, explicit instruction about the benefits, costs and effectiveness of use of this mental control strategy (including other maladaptive strategies) could result in more beneficial responding to intrusive thoughts (such as FNE). Clinicians could discuss the deleterious consequences of persistent suppression effort, and instead encourage the reliance on alternatives strategies such as acknowledging unwanted thoughts as
a worrying yet not necessarily reflective of the social situation they are confronting. It is envisaged that providing information concerning cognitive avoidance would lead to diminishing the prominence and significance of ‘needing’ to avoid thoughts.

For individuals with social phobia who perceive their thought control ability to be poor as evidenced by findings in Study 1 and 2, further psychological interventions may be of assistance in attenuating the emotional costs of this perception. Given that individuals with social phobia perceived their thought control abilities as low, it appears conceivable that psychological interventions directed at lessening thought suppression effort would correspondingly decrease perceived difficulty in controlling unwanted thoughts. Likewise, individuals with social phobia could benefit from cognitive restructuring targeted at changing their negative beliefs concerning the perceived difficulty of restricting awareness of unwanted thoughts. Cognitive restructuring could concentrate on substituting mistaken appraisals of perceived difficulty (e.g., “I have great difficulty keeping these thoughts out of my mind; it is necessary to suppress it with greater effort or I will be over-run by these thoughts.”) with more balanced assertions (e.g., “Although it is difficult to keep these thoughts out of my mind, this doesn’t mean I have poor mental control ability. A healthier strategy would be to acknowledge the thought as opposed to attempting to suppress it. These will likely lead to the unwanted thought leaving my mind without forcing it out.”) In combination, these interventions may hasten the individual with social phobias’ reduction of negative meanings that are associated with their thought suppression attempts and perceived efficacy of keeping them out of the mind.

Study Two evidenced lack of change in frequency of use for distraction following CBGT and individuals with social phobia successfully suppressing social threat stimuli in Study Four. These results support an important treatment focus for individuals with social phobia. In contrast to either changing negative thoughts or attempting to distract or suppress
such, attention may be guided towards information that disconfirms particular negative beliefs and appraisals. Additionally, an important task for the socially anxious individual during actual social encounters is to place their attention on the task at hand as opposed to engaging in self-focussed attention. Engaging in self-focussed attention would likely involve excessive focus on the socially anxious persons’ perceived thoughts of negative evaluation, physiological sensations and irrational evidence suggesting disapproval by the audience. Recent research by Glick and Orsillo (Glick & Orsillo, 2011a) examining the role of self-focussed attention in students exhibiting high level of social anxiety found that self-focussed attention was significantly associated with these individuals attempts at suppressing, controlling or attempting to alter their uncomfortable internal experiences (experiential avoidance).

In terms of a treatment recommendation, individuals with social phobia may be asked to direct their attention towards information that disconfirms specific negative beliefs and appraisals. Attention training strategies have been utilised with social phobia with demonstrated effectual treatment of the disorder (Wells & Papageorgiou, 2001; Wells, White, & Carter, 1997). Similarly, a recent treatment study, which include attention training modules within the training package (Rapee et al., 2009), demonstrated the potential advantage of attention training for the treatment of social phobia. As attention training does not involve avoidance or combating negative thoughts, it may impede the ironic effects of thought suppression and assist in the habituation to these unwanted cognitions (Wells, 2007). As was demonstrated by Wells and Papageorgiou (2001), asking individuals with social phobia to redirect their attention away from a self-focus onto specific features of the external social situation whilst confronting an anxiety provoking situation was more effectual than just exposure. The utilisation of this strategy impacted on both reductions in anxiety levels and decreases in erroneous beliefs. These results suggest that maintaining self-focus during social
exposure contributes to the maintenance of social phobia, and strategies such as attention training may contribute to improvements in the disorder. As Beck and Clark (1997, p. 56) state, “cognitive therapy…does not teach patients to suppress their 'involuntary' anxious thoughts. Rather the cognitive therapist teaches the anxious individual a strategy that emphasizes elaboration and reflection on their threat-related cognitions.”

A recent meta-analysis clearly supports the presence of biased attention for threat across the anxiety disorders (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van IJzendoorn, 2007) and this attentional bias has strong support for its presence in social phobia (Schultz & Heimberg, 2008). A recent meta-analysis by Tobon, Ouimet and Dozois (2011) found that 10 of 13 studies across various anxiety disorders demonstrated a treatment-related reduction in attentional biases following participation in CBT. Treatment in this area includes; Rapee and colleagues’ attention retraining augmentation of CBT (Rapee et al., 2009), Bogels’s Task Concentration Training (Bogels & Mansell, 2004), as well as mindfulness-based interventions (e.g. Goldin & Gross, 2010). As we are still in the early stages of research examining these promising approaches, further research is needed.

Just as deliberate attentional focus on the task at hand in social situations may be beneficial for the individual with social phobia, distraction as a strategy may also be of therapeutic benefit dependent on which stage of processing it occurs in. Despite Turk, Heimberg, and Hope (2001) stating that, “patients are asked to engage in cognitive restructuring activities before, during, and after each in vivo exposure” (p. 123), there is evidence to suggest that distraction and not necessarily cognitive restructuring or focused exposure be used during specific stages of confronting anxiety contributing stimuli. Focused exposure is defined as intentionally directing attention to either the internal anxiety symptoms (e.g., heart palpitations in panic disorder) or on the external qualities of the feared stimulus (e.g., the social audience in social phobia) during exposure (Oliver & Page, 2003). As
suggested by Mulkens, Bögels, De Jong and Louwers (1993), for both individuals with heightened levels of social anxiety and specific phobia, external attention to the anxiety provoking stimuli is recommended.

Although not specific to social anxiety, research with specific phobias suggests that the use of distraction enhances exposure to feared stimuli. For instance, Johnstone and Page (2004) found with spider phobic patients that individuals who utilised distraction during confrontation to the feared stimulus demonstrated larger reductions in their subjective fear reports then participants who used ‘stimuli focus’ during exposure. Additionally, the use of distraction was also positively associated with greater increases in self-efficacy ratings, thus supporting the use of distraction as a mental control strategy during exposure to the feared stimuli. Similar results were also found with blood phobic patients (Oliver & Page, 2003). These authors found continued growth in perceived control over anxiety one month following exposure for their exposure plus distraction participants, suggesting that a coping strategy had been enhanced. As highlighted in a recent meta-analysis (Rodebaugh, Woods, & Heimberg, 2007) examining the clinical efficacy of diverting attention or focusing attention during exposure to threatening stimuli these authors suggest, “distraction in contrast to focused exposure could be less counterproductive and even useful to exposure” (p. 31).

Despite the reduction in the quality of exposure (and consequent habituation) the disadvantages of distraction may be compensated for by the increased practice opportunities associated with behavioural exposure, and importantly the beneficial consequence of increased self-efficacy following confronting the anxiety provoking situation (exposure). For individuals with social phobia, during actual confrontation of the anxiety provoking situation, the use of distraction during social exposure aids in the individual engaging in behavioural exposure and thereby likely increases self-efficacy as behavioural avoidance has been
successfully minimised. Further research and a program of study in this area is warranted to better understand and evaluate these hypotheses concerning the potential value of distraction.

5.4. Directions For Future Research

As was introduced in Chapter One, across the three models of social anxiety there is agreement regarding the view that there are three distinct yet overlapping stages in which an individual with social phobia thinks about a social event and engages in attempted mental control: anticipatory thoughts about the upcoming event (stage one), actual exposure to the social situation (stage two), and post-event processing (stage three). A future program of research could investigate how individuals with social phobia engage in mental control strategies during these three stages. This will be detailed in the section below.

During the anticipatory anxiety stage (stage one), individuals with social phobia review in detail what they believe will happen in the upcoming social situation. The social anxiety symptoms feed back into beliefs that others are threatening, thereby strengthening and maintaining the disorder. Increasingly the individual foresees in advance that they will feel anxious, be evaluated negatively and or behave in an embarrassing manner. In Study Four, individuals with social phobia engaged in successful suppression of social threat stimuli, as shown in previous work examining this mental control strategy with these stimuli (Cougle et al., 2005; Magee & Zinbarg, 2007). However, the paradoxical effects of thought suppression may have been found if carried out under conditions of heightened anticipatory anxiety (i.e., an anxiety induction condition) during attempts to suppress social threat stimuli. Study Four utilised an online thought suppression paradigm to examine attempted suppression with both individuals with social phobia and a control group, the results may have been different if conducted during periods in which study participants were experiencing elevations in their perception of anticipatory anxiety. Incorporating such a condition into a replication of the studies presented in this dissertation would be a fruitful area for further research.
Additionally, future research could further our understanding of thought suppression by examining the actual discomfort experienced by individuals during mental control. For example, in their quest to block unwanted thoughts, individuals may desire to reduce the high level of anxiety that can accompany social threat stimuli. Some researchers, for example, Purdon and Clark (2001), have argued that the emotional discomfort accompanying thought suppression should be the focus of investigation in addition to the frequency of thoughts. Studies Three and Four in the present research examined activation of thought stimuli whilst it was occurring, thereby capturing automatic and strategic processes during attempted distraction of stimuli; however, in these studies, participants were not instructed to suppress their moods, but rather to control mood-related thoughts. Recent work on social anxiety and emotional suppression found that individuals with heightened levels of social anxiety reported greater use of emotional suppression than non-socially anxious individuals (Spokas et al., 2009). Spokas and colleagues studied socially anxious students and relied on retrospective recall of emotional expression. Thus, as in Study Four of the current research, in which the online exploration of social threat content was conducted, assessing emotional responses (not just emotion-eliciting stimuli) would generate valuable data regarding on-line emotional suppression in social phobia. This could involve assessing emotional responses to emotion-eliciting stimuli as used by Campbell-Sills, Barlow, Brown and Hofmann (2006) or utilising additional assessments of emotional responding such as psychophysiological measures.

The third stage in the processing of an anxiety provoking situation involves post-event processing (PEP) during which the interaction is reviewed in detail with themes of perceived inadequacy, negative self-perceptions and anxious feelings (Clark & Wells, 1995; Rapee & Heimberg, 1997). Over the last decade interest in this stage of processing has increased, with some authors suggesting that since negative information is encoded during social situations it
is easily recalled, as the individual with social phobia consequently ruminates about the event (McEvoy & Kingsep, 2006). It is important to understand which adaptive or maladaptive control strategies are being used during this phase of processing the social event. Identifying control strategies that the patient is using, would allow the clinician to assist the individual with social phobia to increase utilisation of functional strategies (e.g. reappraisal) and/or reduce dysfunctional ones (e.g., punishment or worry). Additionally, as opposed to distracting oneself from the recent social situation, a review of the social event after it has occurred would contribute to enhanced adaptive processing. This could involve an emphasis on objectively reshaping the perception of the previous social event using more adaptive mental control strategies such as social control and reappraisal. Future research examining mental control strategies an individual with social phobia utilises during PEP is needed.

Other areas for further research suggested by the series of studies presented in this dissertation are whether different mental control strategies are used for separate thought content and further clarification of the role that distraction plays in social phobia. In Study Two, the only thought control strategy linked to depressive symptom reduction change post-CBGT was increased use of reappraisal. While regulation of social anxiety symptoms (specifically FNE) was more effectively managed with distraction and the social control mental control strategies. These findings highlight the point that different mental control strategies play an important role in the management of social anxiety and depressive symptomatology. Future research could replicate Study Two, yet include groups of both individuals with social phobia and major depressive disorder to more clearly ascertain whether reappraisal, distraction and social control are differentially used for anxiety and depressive cognitions.

The present dissertation used the OTSP to examine how individuals with social phobia attempted to suppress social threat stimuli at automatic and strategic levels of processing in
Studies Three and Four. Future research could examine how subjects attempt to suppress specific stimuli using this paradigm. For example, Moscovitch (2009) suggests that feared self-relevant stimuli for individuals with social phobia can be broken down into four “core underlying process[es] of self-concealment” (p. 132) which includes: (1) perceived flaws in social skills and behaviour (e.g. “I will do something stupid”); (2) perceived flaws in concealing potentially visible signs of anxiety (e.g., “my hands are trembling”); (3) perceived flaws in physical appearance (e.g., “I am ugly”) and; (4) perceived personality flaws (e.g., “I am an idiot”). Using these stimuli, as well as categories not necessarily specific to social phobia in the OTSP, such as ‘financial concerns’, ‘depression’ or ‘general worry’ etc., could allow for improved determination of whether there is a general or specific mental control deficit in social phobia.

The mental control strategy of distraction was a major theme across the four studies presented in this dissertation. For Study One, in comparing thought control strategy use for individuals with social phobia and controls, distraction was utilised significantly less by the clinical group. For the CBGT treatment in Study Two, distraction was the only thought control strategy which did not evidence change following treatment. Study Three found that individuals without a psychiatric disorder did not engage in distraction of social threat stimuli as evidenced by increased activation at the automatic level of processing for this stimuli and continued activation during conscious activation of such. Using the same methodology as Study three, Study four found that individuals with social phobia evidenced increased activation of social threat stimuli at the automatic level of processing during distraction of social threat stimuli, yet a significant decrease during conscious attempts to engage in distraction.

In Study Two it was shown that the TCQ may not capture change in the form of distraction utilised post-CBGT because it does not differentiate between focused and
unfocused distraction. However, an alternative explanation is that this mental control strategy is resistant to change; that is, while standard cognitive behavioural strategies might indirectly modify use of some mental control strategies, distraction might not be similarly affected by these methods. More research is needed to ascertain whether distraction is resistant to change using CBGT or rather the TCQ is not truly capturing the specific essence of this mental control strategy.

5.5. Study Limitations

There are several limitations related to causal inferences, measurements and generalisations in this dissertation that require discussion. These are discussed in detail below.

5.5.1. Limitations related to causal inferences. In terms of causal inferences, a limitation of this dissertation is that analyses concerning the relationships between symptomatology, suppression, mental control strategies (such as distraction) and metacognition were grounded on correlational analyses. Thus, it is not possible to establish causal relationships between variables. For example, despite significant correlations between the FNE and the worry and punishment control strategies, the direction of causality is uncertain in terms of whether these dysfunctional mental control strategies cause elevations in FNE or whether this relationship is reversed, or in fact there is a ‘third factor’ responsible which is contributing to the results. This unstudied variable could potentially be reflective of elevations in emotions which are likely the result of experiencing negative evaluation (or resultant comorbid depression). Therefore, the causal relationships inferred in the interpretation of correlational results in this dissertation need to be speculative in nature. Further research is necessary to bolster the empirical evidence to elucidate the causal directions among these variables.
5.5.2. Limitations related to measurement. Purdon (1999) commented on the dissimilarity between the actual experience of intrusions and research on this phenomenon. Research in this area typically asks individuals to suppress (as exemplified by the OTSP used in Study 3 and 4 in this dissertation). This is despite thought control and management of unwanted thoughts being self-directed. During an experiment, failing to suppress intrusive thoughts would not trigger the same degree of anxiety as that occurring in a natural context. This is important as anxiety may interfere with thought suppression attempts or in the case of research by Cougle et al. (2005), it facilitates suppression of social threat stimuli. The important point is that in the present dissertation an important condition, anxious induction, may elucidate whether laboratory based thought suppression is analogous to real-life circumstances. Janeck and Calamari (1999) support this by pointing out that subjects find the intrusions in an experimental setting significantly less threatening than a natural environment. Furthermore, the self-report measurement of thought control strategies, suppression and other clinical symptomatology may be different if chosen during an anxiety provoking situation.

A further limitation relates to the specific means by which fear of negative evaluation was measured across studies in this dissertation. All instances of assessment of FNE for this dissertation utilised the FNES (Watson & Friend, 1969), despite there being a briefer version (BFNES; M.R. Leary, 1983) currently in existence. Additionally, Heimberg (1994) highlights the potential overlap of cognition and anxiety in the original items of the FNE in that some items include both cognitive elements and physiological components of social anxiety (i.e. “I become tense and jittery if I know someone is sizing me up”) thereby conflicting with accurate identification of the cognitive element of FNE. As a result of these potential difficulties associated with the original FNES, future work examining mental control in social phobia could use the BFNES as opposed to the original FNES.
5.5.3. **Limitations related to generalisation.** A limitation which relates to restrictions on generalisability, involves the lack of psychiatric control groups which would involve including other clinically diagnosed disorders in addition to Social Anxiety Disorder. Individuals with mental disorders other than social phobia (e.g., Generalised Anxiety Disorder, Obsessive Compulsive Disorder, Major Depressive Disorder or Panic Disorder,) do encounter various modalities and/or contents of negative intrusive thoughts. This includes; worrisome intrusions of a general nature, obsessional intrusive thoughts, negative and ruminative thoughts about the self or somatic concerns respectively. Therefore the use of specific mental control strategies, perception of the ability to control unwanted thoughts, metacognitions and the operation of the unconscious monitor and conscious operator may differ in terms of the specific thought the individual is attempting to suppress. This could be addressed in future research by including a comparative psychiatric group diagnosed with one of these aforementioned disorders, thereby allowing my results to be differentiated from other psychiatric conditions. A further limitation regarding generalisation is that the context in which the study participants completed the self-report and OTSP task. That is, in all cases participants completed these tasks in the confines of a clinic or room designated for the experiment. As such, it is unclear as to whether the same results would have been obtained during instances of study participants attempting thought control in everyday environments. Future research could examine the effects of various contexts on mental control such that laboratory based theories of thought suppression are better representations of real-life phenomenon.

A further limitation associated with generalisability relates to research conducted by Kelly and Kahn (1994). These researchers suggested that individuals may not be successful in suppressing intrusive thoughts in the first instance; although with repetition, suppression may be more efficacious. Or, in the case of my research individuals with social phobia,
during a long suppression period, may not be successful in suppressing thoughts with resultant ironic effects evident. In order to address this issue, future research is needed to examine the effects of suppression over different time durations thereby allowing for a better understanding of real-life mental control attempts.

A final limitation relates to the relatively modest sample sizes in some studies in the present dissertation. For example in Study One, there was a reported non-significant age difference between groups (p < .07), yet with greater statistical power the difference could potentially have been significant. Future studies, using larger samples, could clarify which of the findings in the present dissertation are replicable. In so doing it would strengthen the confidence in the conclusions that have been drawn.

5.6. Conclusions

The studies and results outlined in the present dissertation underscore the importance of a focus on mental control strategies and their associated cognitive processes. Some suppression strategies are an inefficient means of managing unwanted thoughts for individuals with social phobia as well as healthy controls. Two of the studies presented here (Study Three and Four) examined both automatic and strategic processes whilst individuals attempted to engage in distraction from social threat stimuli. It was found that individuals with social phobia successfully engaged in distraction from social threat stimuli, whilst healthy controls did not evidence suppression of this stimulus class.

In a review of cognitive vulnerability to emotional disorders, Mathews and MacLeod (2005) state:

Rather than assume that all top-down control is ineffective, we suggest that some types of attempted cognitive control may be detrimental, whereas others are more likely to be
beneficial. An important area for future research is to distinguish productive from counterproductive control strategies (p.178).

The four studies reported on in this dissertation have begun to address Mathews and Macleod’s aforementioned proclamation. Despite the likelihood that thought suppression strategies, including distraction, contribute to lack of habituation to target thoughts (such as social threat stimuli), other more purposeful conclusions can be reached. More functional responses to unwanted thoughts such as attentional training, can be reached, in which patients are trained to redirect attention from a self-focus and onto facets of their external social environment during exposure may be of benefit. Additionally, ‘tailoring’ the timing of use of distraction during the specific stages associated with confronting anxiety provoking situations may also be of clinical benefit to social anxiety sufferers.

The results obtained in this research are consistent with recent trends in the improvement of cognitive interventions for the treatment of social phobia. Empirically validated treatment for social phobia currently involves a blend of exposure and cognitive restructuring as their principal components (Hofmann, 2007). Recent work by some authors (e.g. Rapee et al., 2009) has involved examining the effects of incorporating central cognitive processes in treatment packages to improve efficacy. This dissertation has produced a better understanding surrounding the role of functional and dysfunctional mental control strategies and glimpses into the underlying automatic and strategic processes associated with thought suppression in the maintenance of social phobia. Further research should be directed at whether the use of distraction by individuals with social phobia at different stages of processing the anxious event assists or detracts from their quest to manage intrusive thoughts.

Future research on mental control strategies should not so much focus on whether or not suppression occurs. We know it occurs in normal every-day experiences and that individuals
with social phobia appear to distract themselves from social threat stimuli in a ‘successful’ manner, albeit in a manner that may contribute to diminished habituation to these very thoughts thereby maintaining the disorder. That distraction is counterproductive — or at the very least ineffective — is undeniable, particularly with regard to the distress it causes and the cognitive exertion it requires. The present research adds to our understanding of social phobia, a condition that strongly influences the thoughts, behaviours, physiological sensations and social interactions of affected individuals. Moreover, it will aid in better understanding the role of cognitions and the mechanisms by which cognitive change impacts on reducing the clinical symptoms of social phobia and advance functional and adaptive social performance.
References


Hoping, W., & de Jong-Meyer, R. (2003). Differentiating unwanted intrusive thoughts from thought suppression: What does the White Bear Suppression Inventory measure? 


Appendix A: Word Stimuli Used in Study Three and Four

<table>
<thead>
<tr>
<th>Neutral (Sport) words</th>
<th>Social Threat words</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tennis</td>
<td>1. Arrogant</td>
</tr>
<tr>
<td>2. Soccer</td>
<td>2. Blushing</td>
</tr>
<tr>
<td>3. Football</td>
<td>3. Clumsy</td>
</tr>
<tr>
<td>4. Swimming</td>
<td>4. Awkward</td>
</tr>
<tr>
<td>5. Cricket</td>
<td>5. Fumbling</td>
</tr>
<tr>
<td>6. Squash</td>
<td>6. Failure</td>
</tr>
<tr>
<td>7. Hockey</td>
<td>7. Feeble</td>
</tr>
<tr>
<td>8. Basketball</td>
<td>8. Flustered</td>
</tr>
<tr>
<td>11. Volleyball</td>
<td>11. Stupid</td>
</tr>
<tr>
<td>12. Rugby</td>
<td>12. Inadequate</td>
</tr>
<tr>
<td>13. Running</td>
<td>13. Incapable</td>
</tr>
<tr>
<td>15. Badminton</td>
<td>15. Inferior</td>
</tr>
<tr>
<td>17. Diving</td>
<td>17. Irrelevant</td>
</tr>
<tr>
<td>18. Canoeing</td>
<td>18. Irritating</td>
</tr>
<tr>
<td>20. Bowling</td>
<td>20. Immature</td>
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<tr>
<td>22. Croquet</td>
<td>22. Mediocre</td>
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<tr>
<td>23. Boxing</td>
<td>23. Nervous</td>
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<tr>
<td>24. Dancing</td>
<td>24. Dreary</td>
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<tr>
<td>25. Skating</td>
<td>25. Shaking</td>
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<tr>
<td>27. Hunting</td>
<td>27. Uninspiring</td>
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<tr>
<td>28. Rowing</td>
<td>28. Terrible</td>
</tr>
<tr>
<td>29. Skipping</td>
<td>29. Unreliable</td>
</tr>
<tr>
<td>30. Hiking</td>
<td>30. Useless</td>
</tr>
<tr>
<td>31. Shooting</td>
<td>31. Weird</td>
</tr>
<tr>
<td>32. Softball</td>
<td>32. Worthless</td>
</tr>
</tbody>
</table>

Social Threat vs Neutral Words

- lack of between group significance for **Kucera word frequency** $F(1,62) = 1.72, p = .195$
- lack of between group significance for **word length** $F(1,63) = 2.499, p = .119$
- significant difference for between group valence: Social threat ($x=-2.07, SD=.45$) and neutral category ($.35, SD = .73$) $F (1,63) = 251.62, p <.001$