The Dissertation Committee for Jonathan David Horowitz certifies that

this is the approved version of the following dissertation:

# The Effects of Emotional Acceptance and Suppression upon Emotional Processing in Exposure Treatment of Claustrophobia

**Committee:**

Michael J. Telch, Supervisor

Christopher G. Beevers

Caryn L. Carlson

Francisco Gonzalez-Lima

Keenan Pituch

# The Effects of Emotional Acceptance and Suppression upon Emotional Processing in Exposure Treatment of Claustrophobia

by

**Jonathan David Horowitz, B.A.; M.A.**

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# The Effects of Emotional Acceptance and Suppression upon Emotional Processing in Exposure Treatment of Claustrophobia

Jonathan David Horowitz, Ph.D.

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Supervisor: Michael J. Telch

Recent investigations have suggested that the use of emotion-avoidance or emotion-suppression strategies to cope with anxiety contributes to the development and maintenance of anxiety disorders, and that substituting these strategies with emotional acceptance can lead to effective symptom reduction. We wished to consider whether attempts to suppress the negative emotions associated with exposure therapy would serve to impede emotional processing and symptom reduction, and conversely, whether acceptance of these emotions would augment treatment efficacy. Fifty-nine participants displaying marked claustrophobic fear were assigned to receive 30 minutes of exposure (enclosure in a small chamber) while receiving, A) instructions to accept and allow the experience of unpleasant emotions (ACC), B) instructions to control and suppress the experience of unpleasant emotions (SUP), or C) no instructions regarding emotion regulation (exposure only; EO). Outcome assessments were conducted prior to treatment, immediately following treatment, and at one-month follow-up, and included fear and heart rate reactivity in response to a behavioral approach test. We predicted that ACC participants would display greater reductions in claustrophobic fear than EO participants, and that EO participants would in turn display greater reductions in claustrophobic fear than SUP participants. These hypotheses were not supported. In addition, a detailed analysis of treatment process data was conducted. Peak fear ratings, claustrophobic threat expectancies, self-efficacy, and acceptance of anxiety were collected over the course of the treatment session, and hierarchical linear modeling (HLM) was used to produce individual growth curves for these variables. Three

hypotheses were formulated: 1) ACC participants would display a more rapid improvement in these measures than SUP and EO participants, 2) threat expectancies, self-efficacy and anxiety would mediate reductions in fear over the course of treatment, and 3) mediational pathways would be moderated by treatment condition. Though no support was found for our first process hypothesis, treatment specific mediation was found. Among ACC participants, self-efficacy and suffocation expectancies mediated the session-fear relationship, and among EO participants, entrapment expectancies mediated this relationship. Among SUP participants, no significant mediators were identified.

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# CHAPTER 1: INTRODUCTION

## 1.1 Overview

Anxiety disorders are among the most prevalent and costly of mental disorders. They are also the most successfully treated class of disorders. Efforts to develop and refine anxiety treatments have profited greatly from advances in our understanding of basic mechanisms of fear reduction. Achieving such an understanding is important because even though anxiety disorders are topographically heterogeneous, they all involve 1) an excessive and maladaptive degree of fearful or anxious responding to internal or external stimuli and 2) excessive or rigid attempts to manage anxiety by avoiding those stimuli. Therefore, treatments of all anxiety disorders can be improved by understanding the processes of fear reduction and emotion regulation.

Research on the mechanisms of fear reduction has culminated in the development and testing of emotional processing theories. These theories attempt to explain why exposure therapy is effective at reducing fear and other symptoms of emotional disturbance, and they predict factors that can affect the potency of exposure therapy. Fear reduction studies have been used to test specific predictions of emotional processing theories, such as their prediction that distraction can interfere with emotional processing, and that increased focus on the phobic stimulus and one's own emotional response can enhance emotional processing. Fear reduction studies have been an especially useful tool for theory testing because exposure to a phobic stimulus represents a powerful, ecologically valid emotion manipulation, which can be carefully dosed and parametrically altered.

For these same reasons, fear reduction paradigms may be useful in the study of emotion regulation strategies. Recent research has explored the emotional and cognitive consequences of various emotional regulation strategies, including emotion-control strategies (e.g. thought suppression, expressive suppression, and inhibition of anxious symptoms) and emotional-acceptance strategies. Emotion-control strategies have been found to be cognitively demanding and ineffective at reducing the subjective experience of unpleasant emotions, and may even intensify the experience of those emotions, whereas emotion-acceptance strategies may paradoxically reduce the intensity of these emotions.

These findings are often used to justify acceptance-based therapeutic interventions, which are grounded in the idea that the inflexible and inappropriate use of avoidant emotion-control strategies acts as a causal and maintaining factor of pathological fear and anxiety. While most experimental comparisons of emotion-control and emotion-acceptance strategies have measured their effects on subjective and physiological emotional responding, few studies have considered their effects on emotional processing. Because emotion-control strategies appear to be cognitively demanding, the use of such strategies may impair emotional processing, thereby maintaining anxious and fearful responding.

In order to test whether emotion-control or -acceptance strategies would differentially affect emotional processing, we assigned participants with claustrophobia to undergo exposure while using one of three emotion regulation strategies: emotion control, emotion acceptance, or no particular strategy. We then compared whether the experimentally-assigned strategies differentially affected emotional processing, as

indexed by subjective, physiological, and behavioral measures of fear. We expected that, 1) over the course of the exposure therapy procedure, the emotion-acceptance group would display greater initial fear activation and more rapid fear reduction than the exposure-only and control conditions, and that 2) from pre-treatment to post-treatment and follow-up, the emotion-acceptance group would show greater and more durable reductions in fear than the exposure-only and control conditions.

In addition to assessing the degree to which emotion regulation strategies would affect emotional processing, we also wished to consider their effects on the mechanisms of fear reduction. Specifically, we were interested in whether reductions in fear were mediated by changes in cognition. Over the course of the exposure session, we measured several cognitive variables: threat expectancies, self-efficacy, and acceptance of anxiety. We then used individual growth-curve modeling to conduct a micro-analysis of these variables during the session, and to examine their relationship to fear decline. We expected that, 1) each of these cognitive variables would significantly mediate the relationship between exposure and fear, 2) acceptance of anxiety would account for the largest proportion of that mediational relationship (across all conditions), and 3) these mediational relationships would be moderated by treatment condition (such that acceptance of anxiety would demonstrate mediation most strongly for the emotional acceptance condition, whereas self-efficacy would most strongly mediate the relationship for those in the suppression condition).

## 1.2 Anxiety Disorders

### 1.2.1 The Scope of the Problem

Anxiety disorders are the most prevalent class of mental disorders. According to the National Comorbidity Survey Replication (Kessler, Chiu, Demler, & Walters, 2005), anxiety disorders were found to affect 18.1% of the study's 9282 randomly sampled American respondents—far more than mood disorders (9.5% of respondents), impulse control disorders (8.9%), and substance disorders (3.8%). The twelve-month prevalence rates of specific anxiety disorders varied greatly, ranging from 1% of respondents meeting criteria for obsessive compulsive disorder to 8.7% meeting criteria for specific phobia.

In addition to being highly prevalent, anxiety disorders are debilitating and costly. Those suffering from clinically diagnosable or even subthreshold anxiety disorders report significant impairments in functioning and quality of life (Mendlowicz & Stein, 2000). They may devote an enormous share of their time and energy to managing their anxiety, and they often restrict their range of social and occupational activities and goals in an attempt to avoid the fear and distress inherent in these disorders. This functional impairment has a real economic cost. Using data from the National Comorbidity Study (Kessler, 2002), Greenberg and colleagues (1999) calculated anxiety disorders to cost 42.3 billion dollars annually, though Telch, Smits, Brown, and Beckner (2002) suggested that this figure underestimates the true cost since it omits the cost of obsessive-compulsive disorder (OCD). Moreover, anxiety sufferers overutilize non-psychiatric medical services. For example, the treatment of panic disorder was found to lead to a 94% medical cost offset (Salvador-Carulla, Segui, Fernandez-Cano, & Canet, 1995).

### 1.2.2 Treatment Efficacy

Fortunately, anxiety disorders are highly treatable. According to a review of panic disorder treatment trials by Craske and Barlow (2001), rates of participants without panic at posttreatment and 2-year follow-up were 76% and 78%, respectively. Moreover, panic disorder treatment has been found to significantly improve quality of life (Telch, Schmidt, Jaimez, Jacquin, & Harrington, 1995). Treatments for specific phobia have been similarly efficacious. In a recent meta-analysis of psychosocial treatment trials for specific phobia (Wolitzky, Horowitz, Powers, & Telch, in press), treatment response rates, rates ranged from 40% (Ost, Fellenius, & Sterner, 1991) to 94% (Powers, Smits, & Telch, 2004), with an average of 76% of participants responding to the treatment. Perhaps the anxiety disorder which has been most resistant to treatment has been generalized anxiety disorder (GAD; Wells, 2002; Roemer & Orsillo, 2002). However, even treatments for GAD have been moderately successful, producing treatment response rates between 40% (Fisher & Durham, 1999) and 77% (Ladouceuer, Dugas, Freeston, Léger, Gagnon, & Thibodeau, 2000).

Although a considerable variety of treatments, targets, and samples have been examined in the anxiety disorder literature, psychosocial treatments have been generally found to produce treatment gains equal to or better than pharmacotherapy in the short term (Otto, Smits, & Reese, 2005), and there is considerable evidence that cognitive-behavioral therapy (CBT) treatment gains are better maintained after treatment discontinuation than those produced by pharmacotherapy (Hollon, Stewart, & Strunk, 2006; Roth & Fonagy, 2005). Though their specific mechanisms of action are heterogeneous, anxiolytic medications reduce anxious responding via the regulation of

neurotransmitters (Mitte, 2005). When these treatments are discontinued, anxiety symptoms often return (Liebowitz, 1998). In contrast, CBT approaches involve educating clients about the nature of anxiety, teaching clients to challenge their anxiety-provoking cognitions, and utilizing behavioral exposure exercises, all of which serve to bring about behavioral changes that persist after treatment discontinuation.

### 1.2.3 Mechanisms of Change

One reason for such success in developing and refining CBT for anxiety is that researchers have invested considerable effort in understanding the mechanisms of change underlying therapeutic gains. Outcome research is useful, but mechanism research is equally, if not more, useful in the long run (Borkovec & Castonguay, 1998), for several reasons. For one, there has been a proliferation of multi-componential anxiety treatment packages, many of which share some overlapping features. Determining the relative efficacy of all available treatment packages would be highly impractical, if not impossible. As Bandura wrote, "Without…knowledge [of mechanisms of change], the search for effective [therapeutic] methods reduces to a fortuitous process of trial and error in which failures typically far exceed successes" (1978). Moreover, different treatments may contain elements that are superficially distinct but functionally equivalent. Refining treatments involves not just identifying active and inert treatment components, but understanding how those components function (Doss, 2004). As Kazdin so eloquently put it, "The focus on mediators or mechanisms represents a deeper level of understanding…because this means we know how the problem unfolds, through what processes, and the ways in which one variable leads to another." (1999)

Though anxiety disorders display topographical heterogeneity, they all share two at least two common elements: 1) abnormal anxious responding to external or internal stimuli (Telch et al., 2002) and 2) reflexive attempts to avoid those stimuli (Eifert and Forsyth, 2005). Therefore, the general behavioral therapy (BT) approach to treating all anxiety disorders involves 1) the identification of the anxiety-provoking internal or external cues, and 2) structured exposure to those cues, which brings about a reduction in anxious responding. In cognitive-behavioral therapy (CBT), this procedure is augmented by the correction of faulty beliefs about the threatening stimuli (Beck & Emery, 1985). In cases of specific phobia, this procedure is relatively straightforward, since the anxiety-provoking stimulus is circumscribed and clearly identifiable. In other anxiety disorders, the anxiety-provoking stimulus is less readily apparent. In panic disorder, unusual interoceptive body sensations may lead to panic attacks (Bouton, Mineka, & Barlow, 2001), whereas in posttraumatic stress disorder (PTSD), intrusive memories of a traumatic event may provoke acute anxiety (Brewin & Holmes, 2003). In any case, cognitive restructuring and behavioral exposure can reliably and effectively reduce symptoms (Butler, Chapman, Forman, & Beck, 2006; Clark, 1999; Barlow, Esler, & Vitali, 1998), and these procedures' efficacy may depend on the way in which they are delivered (Wells, Clark & Salkovskis, 1995; Ost, Ferebee, & Furmark, 1997). Thus, a good understanding of the mechanisms of fear reduction can lead to improvements in treatments for all anxiety disorders.

### 1.3 Fear Reduction

Fear is widely recognized to be an adaptive emotion, enabling an organism to rapidly respond to environmental threats (Damasio, 1994). But fear can also be

problematic. Psychologists have long attempted to understand the etiology of pathological fear and to produce effective methods of treatment. From early on, it was clear that exposure therapy provided a reliable way to reduce fear and anxiety. However, the mechanisms underlying exposure therapy are still not fully understood.

### 1.3.1 Behavioral Models of Fear Reduction

Initial attempts to understand fear reduction were based largely on early models of fear acquisition and maintenance that were grounded in theories of classical conditioning (Pavlov, 1928; Watson & Rayner, 1920). These theories posited that individuals acquire phobias via the same associative learning processes observed in laboratory animals. According to these models, a traumatic experience involving the phobic object may lead to the acquisition of a conditioned fear response, which then generalizes to related objects. Mowrer's two-factor theory (1960) combined elements of classical and operant conditioning, suggesting that fears are acquired via associative learning but maintained via operant learning. Mowrer conceived of phobic avoidance as an operant behavior that is maintained by negative reinforcement (the resultant reduction of anxiety), which reduces the occurrence of future exposure to the feared stimulus.

Because these theories were developed from behavioral models that did not recognize cognitive mediation, they credited fear reduction to automatic nonconscious processes. Decreases in anxious responding that occur during exposure were thought to represent habituation - the automatic reduction of responding to repeated stimuli – or extinction, in cases in which the fear was initially conditioned (Mackintosh, 1987; Marks, 2000).

### 1.3.2 Cognitive-Behavioral Models of Fear Reduction

Though influential and useful, purely behavioral accounts proved insufficient in several ways. For one, they required contiguity (the concurrent pairing of UCS and CS), in the form of a traumatic learning event involving the phobic target. Comparisons of phobic and non-phobic individuals, however, often failed to demonstrate that phobia sufferers had a history of more frequent contact with the phobic target (Menzies & Clarke, 1994; Menzies, Kirby, & Harris, 1998), and even suggested that phobia sufferers may have had fewer contact experiences than non-phobic individuals (Poulton, Davies, Menzies, Langley, & Silva, 1998). Moreover, these theories failed to answer some important questions about fear reduction, such as why it could be accomplished via techniques in which habituation or extinction were not expected to occur, e.g,, flooding, modeling, and cognitive restructuring (Marks, 1987; Rachman, 1990). To account for these phenomena, researchers developed cognitive mediation models, in which the fear response is contingent upon the appraisal of the phobic object as threatening. According to Smith and Lazarus (1993, p. 94), an appraisal is "an evaluation of what one's relationship to the environment implies for personal well-being." Exposure was thought to be one method, albeit a powerful one, that would lead to changes in appraisals, thereby leading to reductions in fear. The specific nature and content of these appraisals differed from theory to theory.

Neo-conditioning theories, (Rachman, 1991; Rescorla, 1988) sought to explain the acquisition and maintenance of phobic behaviors by examining cognitive processes, such as memory and expectation of the unconditioned stimulus (UCS) and the conditioned stimulus (CS). These theories jettisoned the classical assumption that

contiguous pairing of the UCS and the CS were necessary (Menzies & Parker, 1999; Poulton & Menzies, 2002) for conditioning to occur. Rather, the CS need only be appraised as predictive of the UCS. This accounted for the acquisition of a phobia in the absence of a conditioning event, and for how flooding and modeling could bring about reductions in fear. Its inclusion of cognitive representations of the feared stimuli also opened the door to theories of emotional processing.

Whereas neo-conditioning theorists investigated the role of appraisals of the phobic stimulus, Bandura focused on appraisals of coping with potential threat. According to Bandura's (1988, 1986) self-efficacy model, the fear response is determined not only by situational threat appraisals, but by a perceived inability to cope with the aversive cognitions and emotions that arise in response to the threat. Fear reduction is thought to result from changing appraisals of coping self-efficacy. Enhancement of one's sense of mastery to cope with potential threat leads to a corresponding reduction in fear. One powerful method of increasing self-efficacy is via enactive attainment, the experience of mastering a difficult task. Therapeutic exposure is thought to represent such an experience, in that the confrontation with the feared stimulus leads to an increase in perceived ability to handle the situation, thereby leading to a reduction in fear. This theory has received considerable empirical support (Valentiner, Telch, Petruzzi, & Bolte, 1996; Bandura, Reese, & Adams, 1982).

### 1.3.3 Emotional Processing Models of Fear Reduction

In researching traumatic stress and obsessive-compulsive disorder, Rachman (1980) noticed that exposure to trauma-related cues led to reductions in an array of symptoms, such as obsessions, nightmares, phobias, and grief reactions. He also

observed that these symptoms sometimes returned spontaneously after an initial reduction To account for these observations, he introduced the concept of emotional processing (1978; 2001), which he defined as "a process whereby emotional disturbances are absorbed and decline to the extent that other experiences and behavior can proceed without disruption" (1980, p. 51). He proposed that such processing would be facilitated by a direct experiencing of the emotional disturbance at a moderate level.

To avoid circularity in his definition of emotional processing, Rachman suggested that the degree of successful emotional processing could be measured via the use of response probes, in which the therapist "[presents] relevant stimulus material in an attempt to re-evoke the emotional reaction" (1980, p.55). In the case of a phobia, a response probe would be an exemplar of the fear-provoking stimulus (preferably one that is distinct from the stimulus used in the exposure procedure), whereas in PTSD, a response probe might be an object related to the trauma. Rachman's theory was intended to account for reductions in a wide range of abnormal emotional responses, and it has been invoked to explain symptom improvements in various anxiety disorders, including social anxiety disorder (SAD; Huppert & Foa, 2004), panic disorder (Lang, Cuthbert, & Bradley, 1998), posttraumatic stress disorder (PTSD; Litz, Orsillo, Kaloupek, & Weathers, 2000), and specific phobia (Hecker, 1990; for an extensive review, see Foa & Kozak, 1999).

Foa and Kozak (1986) expanded on Rachman's concept by integrating it with Lang's (1977; 1979) bioinformational theory of fear, which posited that fear is represented in memory as a set of three loosely connected types of propositions representing a) the feared stimulus, b) the fearful response, and c) interpretive

information about the meaning of the stimulus (such as beliefs about the connection between the stimulus and response). Foa and Kozak (1986) proposed that emotional processing involves the modification of the fear structure such that the connections between these three propositions are weakened.

This modification requires two preconditions. First, the fear structure must be sufficiently activated. Activation is best accomplished by introducing stimuli that match the fear structure (for example, placing a claustrophobia sufferer into an enclosed space), and it may be amplified by inducing physiological symptoms of anxiety characteristic of the fear response. When any component of the fear structure is activated, the entire structure may be activated via generalization, as a consequence. This explains why anxiety can occur in the absence of conscious appraisal of the feared stimulus (Barlow, 1991). Activation of the structure is graded, such that activation of more of the elements leads to more complete activation.

Second, information incompatible with the fear structure must be provided, so that new elements of the network can be formed (Foa & Kozak, 1986). Reduction in physiological arousal leads to a dissociation between stimulus and response propositions (the stimulus is frightening, but the absence of physiological arousal is incongruent with fear), so that the feared stimulus becomes disassociated from fearful responding. The structure is further weakened in the presence of incompatible information regarding the meaning of the stimulus, such as occurs when threatening predictions regarding the stimulus are disconfirmed.

Some aspects of emotional processing theory have been empirically tested in investigations of phobic populations, such as its prediction that distraction will impede

emotional processing, and that increased activation of the feared stimulus will enhance emotional processing.

#### 1.3.3.1 Does Distraction Impede Processing?

Emotional processing theory predicts that distraction during exposure will reduce fear activation in the short term but will impede emotional processing and thereby hinder fear reduction in the long term (Rachman, 1980; Foa & Kozak, 1986; Kamphuis & Telch, 2000). This should occur in two ways: 1) distraction should hinder the activation of the fear structure (thereby blunting the subjective and physiological fear response) and 2) distraction should impede the encoding and incorporation of information incompatible with fear structure.

Interest in this question preceded the development of emotional processing theories, because therapists had long used distraction during exposure to reduce the client's anxious arousal and improve the procedure's tolerability (Weir & Marshall, 1980). The question also has theoretical relevance, however. Indeed, one impetus for Rachman's development of emotional processing theory was his reasoning that, "If fear reduction…is indeed facilitated by relaxation, and if relaxation increases the vividness of the phobic imagery, perhaps it is the vividness that mediates the therapeutic value of desensitization." (1980, p. 53). In contrast, Bandura's (1977) self-efficacy model predicts the opposite, that successful distraction in the presence of phobic stimuli represents a mastery experience, which would increase self-efficacy and reduce fear.

To date, the experimental findings regarding the effects of distraction have been mixed. Several studies have yielded evidence that distraction does impede fear activation and reduction. Craske, Street, Jayamaran, and Barlow (1991) provided snake- and

spider-phobics six minutes of exposure, during which they received either cognitive load distraction, attentional focus, or natural focus. They found that the attentional focus group reported greater subjective fear than the distraction and natural focus groups. Moreover, several early studies suggested that distraction impeded fear reduction in the treatment of obsessive-compulsive disorder (Grayson, Foa, & Steketee, 1982, 1986) and animal phobia (Sartory, Rachman, & Grey, 1982). And in several studies of claustrophobia treatment, our group found that distraction from the fear-provoking stimulus impeded fear reduction relative to an exposure-only control condition (Kamphuis & Telch, 2000; Telch, Valentiner, Ilai, Young, Powers, & Smits, 2004), whereas increasing focus on the stimulus facilitated fear reduction (Sloan & Telch, 2002).

Other investigators have found evidence to the contrary. In studying individuals with blood-injection-injury (BII) phobia, Penfold and Page (1999) and Oliver and Page (2003) found that those assigned to engage in distracting (stimulus-irrelevant) conversation during exposure experienced greater fear reduction than those engaging in stimulus-relevant conversation. The authors speculated that this resulted from the particular phobic target under study (BII), since distraction may help with the reduction of disgust, but not fear. However, Johnstone and Page (2004) replicated these results using participants with spider phobia, finding that distraction led to greater fear reduction, greater increases in self-efficacy, and greater perceived internal control relative to non-distracted participants.

At least one investigation has suggested an inconsistent relationship between distraction and fear reduction. Craske, Street, and Barlow (1989) found that agoraphobics undergoing exposure therapy while distracted showed greater fear

reduction at posttreatment than those without distraction, but that the effects were reversed at the six-month follow-up.

Why the discrepant findings? At first blush, there appears to be an allegiance effect, since each research group produced consistent findings. But since these investigators used a variety of populations and experimental preparations, this explanation begs the question: what is responsible for the discrepancies?

In a study predating many of these investigations, Rodriguez and Craske (1993) reviewed the literature on distraction and exposure. Since there were only four available studies, they were unable to draw any strong conclusions. However, they drew a useful distinction between cognitive and perceptual distractors. Cognitive distractors are those which decrease cognitive resources sufficiently to impede higher level processing. Perceptual distractors, in contrast, do not necessarily consume a high degree of attentional resources. According to emotional processing theory, a perceptual distractor that does not sufficiently absorb cognitive resources should not impede processing.

As first suggested by Telch et al. (2004), this distinction may explain the discrepant findings. The Page group distracted participants by engaging them in "stimulus-irrelevant, personally-relevant conversation" (p. 257). Craske et al. (1989) had agoraphobic participants distract themselves by focusing on the external environment or engaging in distracting thoughts, such as spelling pronouns backward. And in the 1991 study, Craske and colleagues distracted snake- and spider-phobics by having them listen to target words in audiotaped passages while undergoing exposure. None of these manipulations seem to be nearly as demanding as those used in the Telch studies, which employed highly demanding cognitive-load distractors such as the Seashore Rhythm Test

(Telch et al., 2004) and a complicated arithmetic dual processing cognitive load task (Kamphuis & Telch, 2000). Indeed, it may even be that a low level of distraction makes the exposure procedure more tolerable and serves to prevent the use of safety behaviors, paradoxically increasing focus on the phobic target.

#### 1.3.3.2 Does Fear Activation Enhance Processing?

In Rachman's (1980) introduction of emotional processing, he observed that therapeutic successes were associated with the clients' experiencing phobic or traumatic emotional reactions during the therapy session. Likewise, Foa and Kozak (1986) saw activation of the fear structure as a necessary precondition for processing to occur.

Several investigators have tested this prediction, using different methods of inferring activation of the fear structure. In an examination of spider phobics, Zoellner, Echiverri, and Craske (2000) inferred activation by measuring participants' posttreatment memory of 1) physical characteristics of the phobic stimulus, and 2) aspects of their own anxious responding. They found that better memory for anxious responding, but not memory for the spider, predicted greater reductions in anticipatory and actual anxiety[1]. Other authors have suggested that activation of the fear structure can be inferred from subjective and physiological fear activation. Early studies found that greater initial fear activation led to greater fear reduction (Kozak, Foa, and Steketee,1988; Borkovec & Sides, 1979). In contrast, Telch, Valentiner, Ilai, Petruzzi, & Hehmsoth (2000) and Kamphuis and Telch (2000) found no relationship between fear activation and treatment

[1] Though they did not find a difference between the distraction and natural conditions, this might have resulted from phobic individuals' tendency to focus away from the phobic stimulus. (Tolin, Lohr, Lee, & Sawchuk, 1999). Indeed, this tendency makes the interpretation of "natural focus" conditions difficult to interpret, since individuals in these conditions may spontaneously engage in distraction.

outcome, and Telch et al (2004) actually found a negative relationship between fear activation and treatment outcome.

### 1.3.4 Fear Reduction and Emotion Regulation

Though emotional processing theories are invoked to explain the maintenance and reduction of a various clinical symptoms aside from anxiety, many experimental tests of the theories have used fear reduction paradigms. These studies have largely supported the prediction that cognitive-load distraction impedes emotional processing, and they have largely failed to support the prediction that initial fear activation is necessary for processing to occur. Fear reduction studies have served as a useful tool for testing these theories, because exposure represents a powerful, reliable, and ecologically valid emotion manipulation, which can be easily introduced and parametrically altered.

For these same reasons, fear reduction studies provide a fitting context for the study of emotion regulation. Recent theories of emotion regulation conceptualize emotions as dynamic processes, and the tightly controlled methodologies used in fear reduction studies allow detailed micro-analyses of the emotional trajectory. These studies are also ecologically valid, in that individuals confronting anxiety-provoking situations naturally engage in emotional regulation strategies, which can be experimentally manipulated.

## 1.4 Emotion Regulation

### 1.4.1 Definitional Issues

The question of how best to manage emotions has long been of interest to psychologists (e.g. Freud, 1915/1957; Hochshild, 1983; Wegner & Pennebaker, 1993). In the past few decades, emotion regulation has received increasing attention from researchers in cognitive, clinical, social, and developmental psychology, who have attempted to better define the construct (e.g. Gross & Levenson, 1993; Linehan, 1993). Since emotions are usually regulated in some way (Tompkins, 1984), the question of how to distinguish emotion regulation from emotion generation and other related processes is a delicate one (Gross, 1998b; Mayer & Salovey, 1995; Davidson, 1998). Emotion regulation is intertwined with a number of self-regulatory functions (Kring & Werner, 2004), including attention (Craske, 2005; Vuilleumier & Armony, 2001), higher level cognitive processing (Philippot, Baeyens, Douilliez, & Francart, 2004), and emotional knowledge (Feldman Barrett, Gross, Christensen, & Benvenuto, 2001), and investigations of the construct are often couched in terms of one or more of these related functions. For example, Craske defines emotion regulation as "the reaction to emotional reactivity, with an emphasis on the ability to shift attention (such as from something unpleasant) and to focus attention in a sustained way, and the ability to activate or inhibit behavior" (2003, p.52). Gross defines the construct more broadly (1998b, p.275), as "the process by which individuals influence which emotions they have, when they have them, and how they experience these emotions." This definition is particularly useful in that it allows for the examination of emotion regulation from a number of different perspectives.

There are some ambiguities surrounding emotion regulation's relationship to similar constructs such as *coping* (Folkman, 1997) and *affect regulation* (Westen, 1994). Emotion regulation and coping both fall under the heading of affect regulation (Gross, 1998b), but emotion regulation differs from coping in that it excludes attempts to achieve nonemotional goals. Also, emotion regulation is not limited to the reduction of negative emotions, but rather, involves the enhancement and reduction of both positive and negative emotions in a situationally appropriate manner.

Effective emotion regulation plays an important role in healthy psychological functioning (Tice & Baumeister, 1993; Seligman, 1991). Effective regulation of positive and negative emotions affects the ability of both adults (Shiota, Campos, Keltner, & Hertenstein, 2004; Lopes, Salovey, Cote, & Beers, 2005) and children (Eisenberg, Fabes, Guthrie & Reiser, 2000) to successfully interact socially, and it is considered an important component of emotional intelligence (Mayer, Salovey, Caruso, & Sitarenios, 2001). Several empirical investigations have found that certain emotion regulation styles affect psychological health (Martin & Dahlen, 2005; van Middendorp et al., 2005; Gross and John, 2002), and that the ability to regulate mood is associated with lowered physiological responses to stress (Salovey, Stroud, Woolery, & Epel, 2002). Indeed, many types of therapy, such as CBT (Beck, Rush, Shaw, & Emery, 1979) and Dialectical Behavior Therapy (DBT; Heard, & Linehan, 1994), involve teaching the client to manage aversive emotions.

Nevertheless, the idea that the successful regulation of emotions is important to health appears to be in tension with the view that tight control over one's emotions can be harmful (Pauls, 2005). Psychodynamic theorists have long advised that the inappropriate

use of avoidant defense mechanisms (e.g. repression, denial) to manage emotions may be associated with poor psychological health (Freud, 1923/1961), and health psychologists have found that expressing emotions can lead to improved health outcomes (e.g. Horowitz, 1976; Pennebaker, 1989 and 1990; )

In an attempt to reconcile these seeming discrepancies and provide a framework for the study of emotion regulation, Gross (1998a) developed a process model of emotion regulation. Echoing James' (1884) and Barlow's (1988) writings on the nature of emotion and anxiety, Gross described emotions as response tendencies that can be modulated. Emotions commence with the evaluation of internal or external cues (Frijda, 1988; Arnold, 1960; Lazarus, 1966), followed by "a coordinated set of behavioral, experiential, and physiological emotional response tendencies that together facilitate adaptive responding to perceived challenges and opportunities…these response tendencies may be modulated, and it is this modulation that gives final shape to manifest emotional responses." (Gross, 1998; p. 225). According to this model, emotions are dynamic processes unfolding over time, and they may be regulated at five points "a) selection of the situation, b) modification of the situation, c) deployment of attention, d) change of cognitions, and e) modulation of the responses." (1998b). Modulation is an ongoing process that can be automatic or controlled, conscious or unconscious.

Gross (1998a) proposed that the differing views surrounding the effects of emotion regulation could be reconciled by distinguishing between antecedent- and response-focused emotion regulation strategies. *Antecedent strategies* are pre-emptive attempts to influence an anticipated event of emotional significance. The employment of such strategies (e.g. appraisal and situation selection) would effectively avert an

emotional response before it begins. *Response strategies*, in contrast, are attempts to amplify or downregulate an emotional response that is already underway. Because these strategies do not attenuate the initial stress response, and because considerable effort is required to control a response once initiated, these strategies should be physiologically and cognitively taxing relative to antecedent-focused strategies.

This distinction has received some empirical support. Gross (1998a) presented participants with an emotionally arousing film and instructed them to either reappraise the film in such a way that they felt nothing (an antecedent strategy) or to outwardly suppress their emotions (a response strategy). Both conditions successfully resulted in reduced expressed emotion, but only reappraisal led to a reduction in experienced emotion, whereas only suppression led to an increase in physiological responding.

Richards and Gross (1999) also found evidence consistent with the model's prediction that response strategies are demanding. They showed nonclinical undergraduate participants a set of slides of badly wounded men accompanied by detailed identifying information, and instructed them to either accept or suppress their emotional expression while observing the slides. They found that the suppressors displayed poorer memory for the information and judged their own memory for the information to be less accurate, while also displaying greater cardiovascular activation than those who accepted their emotional responses. And, in an examination of the self-reported use of suppression and acceptance strategies, Gross and John (2003) found that those who claimed more frequent use of suppression strategies reported lower levels of well-being and interpersonal functioning than those who used reappraisal strategies.

### 1.4.2 Emotion Regulation and Psychopathology

If successful emotion regulation is associated with healthy functioning, it bears asking whether deficits in emotion regulation are involved in disordered functioning. According to Kring and Werner (2004), in order to link emotion regulation processes to psychopathology, it is necessary to "a) delineate some of the basic processes comprising emotion regulation, and b) demonstrate that the use of (or failure to use) emotion regulatory processes is associated with an impairment in functioning." (p. 368). As detailed above, Gross (1998b) and others have worked to demarcate these basic processes. And, synonymous with a recent re-emergence in interest in the role of emotion in psychopathology (Suveg & Kendall, 2007; Samoilov & Goldfried, 2000; Westen, 2000), clinical psychologists have begun to document the ways in which emotional regulatory deficits are associated with psychopathology (e.g. Berenbaum, Raghavan, Le, Vernon, and Gomez; 2003; Cicchetti, Ackerman, and Izard, 1995). Emotion regulation is mentioned in the diagnostic criteria of over half of Axis I disorders and in all of the Axis II disorders (Gross, 1998b; Gross & Levenson, 1997; Kring and Werner, 2004). Deficits in emotion regulation are clearly linked to the defining features of some disorders, such as borderline personality disorder (Linehan, 1993), bipolar disorder (Leibenbluft, Charney, & Pine, 2003), and attention-deficit/hyperactivity disorder (Barkley, 1997; Hinshaw, Simmer, & Heller, 1995). Moreover, emotion regulation deficits are implicated in particular theoretical accounts of disorders such as GAD (Mennin, Heimberg, Turk, & Fresco, 2002), eating disorders (Safer, Telch, & Agras, 2001; Westen & Harnden-Fisher, 2001), and depression (Ladouceuer, Dahl, Williamson, Birmaher, Ryan, & Casey, 2005).

Emotion regulation deficits are linked to psychopathology in two ways (Cicchetti et al., 1995; Mennin, Heimberg, Turk, & Fresco, 2005). First, individuals may have difficulty modulating emotional expression or experience, as is seen to occur in bipolar disorder and borderline personality disorder (Berenbaum et al., 2003). Alternately, individuals may attempt to suppress or dampen their emotional reactions to a problematic degree. Some authors have suggested that such inflexible and context-insensitive attempts to avoid or control the experience of unpleasant emotions may play an important role in the maintenance and development of anxiety disorders (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Eifert & Forsyth, 2005). As Craske wrote, "management of negative affect may be as important as negative affectivity itself in the manifestation of excessive and persistent anxiety, and maladaptive reactions to negative affect may be sufficient for the emergence of anxiety disorders." (2005, p. 51)

The idea that psychological problems may arise from attempts to manage emotions via avoidance and control (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Blackledge and Hayes, 2001; Lonigan & Phillips, 2001) has contributed to the development of newer therapeutic modalities that introduce emotional acceptance as an alternative to avoidance or control. In acceptance- mindfulness-based therapies, such as Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999b) and Mindfulness Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), clients are encouraged to experience their emotions, thoughts, and bodily sensations fully without trying to change, control, or avoid them (for a review of such therapies, see Hayes, Follettte, & Linehan, 2004). In these therapies, the therapist may even warn the

client of the potentially harmful nature of avoidance strategies, and they encourage the client to abandon them.

Avoidant emotion regulation strategies may manifest in a number of ways. Avoidance may be subtle and internal, such as in GAD, in which engagement in worry may represent a compulsive, avoidant response to unpleasant thoughts and feelings (Borkovec & Roemer, 1995; Mennin, 2004), or in OCD, in which engaging in compulsive behaviors leads to temporary reduction of anxiety. Alternately, avoidance may be manifested outwardly, such as in social phobia (Wells, Clark, Salkovskis, Ludgate, Hackman, Gelder, 1995), or in excessive drinking or other risky behaviors (Marlatt, 1994). Though topographically distinct, these behaviors are functionally equivalent in that they are intended to reduce anxiety in the short term, but they maintain or amplify anxiety in the long term.

The view that avoidance and control of emotions can cause or maintain psychopathology is consistent with a number of well-supported behavioral models of anxiety disorders. According to the two-process theory of anxiety (Mowrer, 1960), avoidance of anxiety-provoking stimuli is responsible for the maintenance of anxious responding. Others (Salkovskis, 1991; Telch, 1991) have suggested that avoidance and other defensive actions contribute to the maintenance of pathological fear by reducing opportunities for threat disconfirmation. Consistent with this view, a number of investigators have demonstrated that the use of avoidant anxiety-management strategies, or safety behaviors, can impede fear reduction (Powers, Smits, & Telch, 2004; Sloan & Telch, 2000; Salkovskis, Clark, Hackman, Wells, & Gelder, 1999). In recognition of the detrimental effects of anxiety avoidance maneuvers, many CBT packages for anxiety

encourage the identification and fading of safety behaviors that maintain the particular anxious response.

Recent experimental challenge studies have shown that individuals who rely on emotion-control strategies reported greater emotional distress and negative thoughts in response to carbon dioxide inhalation challenge procedures (Spira, Zvolensky, Eifert, & Feldner, 2004; Feldner, Zvolensky, Eifert, & Spira, 2003; Karekla, Forsyth, & Kelly, 2004) and emotionally distressing film clips (Sloan, 2004). Converging evidence for the ineffectiveness of such strategies also comes from investigations of thought suppression (see Wenzlaff & Wegner, 2000 for a review), which suggest that attempts to suppress are largely ineffective during the suppression attempt and may actually lead to a rebound effect, in which the target thought occurs far more frequently following the cessation of the suppression attempt (Wegner, Scheider, Carter, & White, 1987; Clark, Ball, & Pape, 1991; Clark, Winton, & Thynn, 1993). There is also evidence that the use of thought suppression strategies is associated with depression (Beevers, Wenzlaff, Hayes, & Scott, 1999). In an experimental investigation, Marcks and Woods (2005) instructed participants to suppress, accept, or monitor personal intrusive thoughts. Those instructed to accept experienced a decrease in discomfort level after having used this strategy, whereas those instructed to suppress experience a higher level of discomfort (neither strategy produced differences in the frequency of the thoughts).

#### 1.4.2.1 Experimental Investigations

A number of investigators have examined whether instructional manipulations of emotional control and acceptance can impact physiological and behavioral responses to emotionally evocative challenge procedures. To date, the physiological data regarding

the effects of control attempts seem to be inconsistent across physiological response channels. Jackson, Malmstadt, Larson, and Davidson (2000) instructed participants to either suppress, enhance, or maintain their emotional responses to emotionally evocative pictures. They found that suppression evinced smaller startle eye blinks but led to increased corrugator activity. Gross and Levenson (1993) had subjects watch a disgust-eliciting film while suppressing their outward emotional responses. Compared to a control group who did not suppress emotions, these participants exhibited increases in electrodermal responding and some cardiovascular measures, while showing decreases in heart rate. Several other studies by Gross's group have suggested a link between suppression and greater cardiovascular activation (Richards & Gross, 1999; Gross, 1998a; Gross & Levenson, 1997).

Other investigators have considered how emotional control affects response to painful stimuli. Hayes, Bissett, and colleagues (1999a) had participants complete a cold-pressor pain tolerance task after they received one of three rationales: an acceptance based rationale, a coping/control rationale, or an attention (placebo) rationale. They found that participants receiving the acceptance rationale displayed improved tolerance for pain despite reporting no differences in the degree of pain experienced. Similarly, Cioffi and Holloway (1993) gave participants a cold-pressor test and randomized them to (a) focus on the sensations, (b) distract themselves, or (c) suppress their feelings of pain. Individuals in the suppression condition showed increased heart-rate and electrodermal responding and slower recovery from pain as compared to the other two groups.

There have been several investigations into the effects of control and acceptance of anxious responding. Eifert and Heffner (2003) exposed 60 undergraduates to two 10-

minute periods of 10% CO2 enriched air, which causes symptoms of anxiety similar to those experienced in a panic attack. They trained the participants either to accept the sensations, to control them via diaphragmatic breathing, or to use no particular anxiety regulation technique. Participants trained to accept the feelings were less avoidant and reported less intense fear and fewer catastrophic thoughts than those in the other two groups. In a similar design, Feldner, Zvolnesky, Eifert, and Spira (2003) had 48 non-clinical participants inhale 20% CO2-enirched air, and instructed them to either inhibit or simply observe the emotional state that was induced. Participants high in emotional avoidance (as measured by the AAQ; see Measures) responded with greater anxiety when inhibiting than when observing their emotional states. Not only does this provide converging evidence that acceptance of an aversive anxiogenic stimulus may be more beneficial than resistance to it, but it suggests that the effects of emotional control may be moderated by an avoidant style of emotion regulation.

#### 1.4.2.2 Emotional Control and Acceptance and Emotional Processing

Few studies have considered how acceptance affects emotional processing. One notable exception is reported in Campbell-Sills, Barlow, Brown, and Hoffman (2006). Using a paradigm similar to that of Richards and Gross (1999), they instructed 60 participants with anxiety and/or mood disorders to watch an emotion-provoking film and instructed them to either accept or suppress their emotional response. They then measured the participants' emotional reaction immediately after the film, and again 2 minutes later. They found that both groups reported similar levels of subjective and physiological distress during the film, and that the suppression showed an increase in HR while the acceptance group showed a decrease in HR. However, the acceptance group

reported less negative affect in the post-film recovery period than did the suppression group. Though the authors did not invoke emotional processing in explaining their finding, perhaps the construct could prove useful in explaining these results. It may be that emotional suppression prevented the full processing of negative emotions that were elicited during the film, thereby prolonging negative affective experience. Indeed, this seems to closely fit emotional processing theory's account of post-traumatic symptoms (Foa & Riggs, 1995), according to which the employment of dissociative strategies for coping with overwhelming negative emotion prevents complete *in situ* processing of the trauma. Although this speculation requires further empirical testing, it bears examining whether emotion regulation could influence emotional processing.

Aside from this single example of a study in which subjective emotion was measured at two time points, the literature has largely concentrated on how emotional and cognitive acceptance and suppression strategies might affect the immediate emotional response to painful and anxiety-provoking stimuli. Though emotion regulation theories stress the dynamic nature of emotion, prior work has largely focused on the way these strategies affected emotional responses at one point in time, rather than how emotional responding unfolds over time. While some authors have investigated cognitive responding immediately following a challenge procedure (the rebound effect in thought suppression has been studied extensively; see Wenzlaff & Wegner, 2000 for a review), little attention has been paid to emotional responding. Thus, it remains an open question how emotion regulation strategies would affect emotional processing.

# CHAPTER 2: THE PRESENT STUDY

## 2.1 Emotion Regulation and Emotional Processing

Exposure therapy is a popular, empirically-validated treatment technique that is frequently used to treat anxiety disorders (Barlow, 2002). There is a robust literature investigating how manipulating participants' attentional resources (e.g. Rodriguez & Craske, 1993) and attempts to manage anxiety (safety behaviors; Wells, Clark, & Salkovskis, 1995; Sloan & Telch, 2002) during exposure can enhance or impede its efficacy. Over the past twenty years, this research has been largely guided by emotional processing theory (Rachman, 1980; Foa & Kozak, 1986), which attempts to explain how exposure works and to identify factors affecting its efficacy. Several well-controlled experiments have supported the theory's prediction that presenting a cognitively demanding distractor during exposure will impede symptom reduction (Grayson, Foa, & Steketee, 1982, 1986; Kamphuis & Telch, 2000; Telch et al., 2004).

Working from a separate theoretical context, some researchers have attempted to classify various emotion regulation strategies (Gross, 1998b) and to understand how these strategies can cause or maintain psychopathology (e.g. Kring & Werner, 2004). Some have suggested that the rigid or excessive use of emotion-avoidance or emotion-suppression techniques contributes to the development and maintenance of anxiety disorders (Blackledge & Hayes, 2001) and that substituting these techniques with emotional acceptance techniques can lead to effective symptom reduction (Hayes et al., 1999b).

Support for such an approach to anxiety treatment comes from correlational evidence that the habitual use of emotional avoidance (Zvolensky & Forsyth, 2002; Brown, Kahler Zvolensky, Lejuez, & Ramsey, 2001), emotion suppression (Gross & John, 2003), and thought suppression (Beevers et al., 1999; Wenzlaff & Wegner, 2001) strategies is associated with poorer psychological health, along with experimental evidence suggesting that emotion suppression is cognitively demanding (Richards & Gross, 1999) and largely ineffective (for a review, see Barnes-Holmes et al., 2004). Conversely, experimental evidence suggests that the acceptance of unpleasant thoughts (Marcks & Woods, 2005) and emotions (Campbell-Sills et al., 2006; Eifert & Heffner, 2003) is associated with less subjective distress in response to distress-inducing challenge procedures.

Taken together, these findings suggest that the habitual use of suppression strategies is associated with poorer functioning, and that their immediate use leads to increased anxious responding. Suppression strategies, however, may also be involved in the long-term maintenance of anxiety. According to emotional processing theory, the use of a cognitively demanding emotion regulation strategy (such as emotional suppression) should impede symptom reduction during exposure. It may be that the habitual use of suppression to cope with anxiety prevents emotional processing from occurring when a participant comes into contact with fear-provoking stimuli. Suppression may represent a sort of subtle safety behavior, which paradoxically serves to maintain anxiety by ultimately blocking or at least attenuating the effective cognitive processing of threat disconfirming information.

If that is the case, we would expect the experimental induction of emotion suppression strategies to retard fear reduction during exposure. Conversely, if acceptance of anxiety can be experimentally demonstrated to enhance fear reduction, this would argue for the integration of acceptance-based rationales into traditional exposure therapies. Thus, the proposed study addresses a theoretical question that also could have some direct clinical implications.

The present study involves a 3-arm randomized clinical trial. Participants displaying claustrophobic symptoms were randomly assigned to receive 30 minutes of exposure to an enclosed space in one of three treatment conditions: (a) Exposure with instructions to accept the emotional response (ACC); (b) Exposure with instructions to suppress the emotional response (SUP); or (c) Exposure-only control (EO). Outcome measures included peak fear (and a reliable change index derived from peak fear), threat expectancies, phobic self-efficacy, and heart rate (HR) reactivity. Assessments were conducted prior to treatment, immediately following treatment, and at one-month follow-up. Theory-relevant process data (peak fear, threat expectancies, phobic self-efficacy, and acceptance of anxiety) were gathered during and immediately following each trial within the treatment session.

## 2.2 Hypotheses

### 2.2.1 Outcome Hypotheses

It was expected that participants assigned to the ACC group would display greater reductions in claustrophobic fear than those assigned to the EO group, who would in turn display greater fear reduction than those assigned to the SUP group. More specifically,

we expected to see this particular pattern of differences in fear reduction (ACC > EO > SUP):

1) From pre-treatment to follow-up, on a composite index of cognitive, behavioral, and physiological measures[2]. We also expected to see a consistent pattern of differences on these measures, as considered individually.
2) From pre-treatment to posttreatment, on a composite index of behavioral, and physiological measures[3]. We also expected to see a consistent pattern of differences on these measures, as considered individually.
3) From pre- to posttreatment, and from pre-treatment to follow-up, in the percentage of participants in each group who display a reliable change in behavioral fear on each of the two BATs and self-reported claustrophobic fear (CLQ).

### 2.2.2 Moderator Hypotheses

A moderator is defined as a variable that "affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable." (Baron & Kenny, 1986, p. 1174). We aimed to examine the potential moderating effects of several theory-relevant and clinically-relevant variables on the relationship between emotion regulation strategy and treatment response. More specifically, we expected that:

1. Among participants scoring higher in dispositional measures of thought suppression and emotional avoidance, EO participants would more closely resemble SUP participants in terms of treatment response (reduction in BAT fear)

[2] This index comprises peak fear for BATs 1 and 2, HR reactivity, and self-reported claustrophobic fear.
[3] This index comprises peak fear for BATs 1 and 2, and HR reactivity

than those in the other two groups (ACC > EO = SUP), since these highly avoidant EO participants would be more likely to spontaneously engage in suppression during the task.

2. Conversely, among participants scoring lower in these measures, we expected that EO participants would more closely resemble ACC participants (ACC = EO > SUP).
3. Higher dispositional measures of suppression (WBSI), emotional avoidance (AAQ), and emotional suppression (ERQ-S) would predict reduced treatment response across conditions.
4. Baseline severity (CLQ scores at pre-treatment), community status, and degree of impairment (DSM-IV criterion E) would not predict treatment response across conditions.

### 2.2.3 Process Hypotheses

Previous studies (Sloan & Telch, 2002; Kamphuis and Telch, 2000) have demonstrated that manipulating parameters of exposure can lead to differences not only in treatment outcome, but also in how fear and threat expectancies change over the course of a 30-minute exposure session. A process-level analysis allows us to better explore the intricacies of individual change. For each participant, hierarchical linear modeling (Raudenbush & Bryk, 2002) was used to model changes in fear and other process-relevant cognitive variables for individuals undergoing the exposure procedure. These models allowed us test the following hypotheses:

*Process Hypothesis 1:* A significant effect of exposure condition will be observed for initial fear activation and fear decline during treatment.

*Hypothesis 1a:* The ACC group will display greater fear activation and between-trial fear reduction relative to the other two treatment groups (EO or SUP).

*Hypothesis 1b:* Participants assigned to the SUP group will display significantly lower fear activation and between-trial fear reduction relative to the other two treatment groups (EO or ACC).

*Process Hypothesis 2:* A significant effect of exposure condition will be observed for the putative mediators of fear reduction (self-efficacy, acceptance of anxiety, and suffocation/entrapment concerns) during treatment.

*Hypothesis 2a:* The ACC group will display significantly greater between-trial improvements in self-efficacy, acceptance of anxiety, and suffocation/entrapment concerns relative to the two other treatment groups (EO or SUP).

*Hypothesis 2b: P*articipants assigned to the SUP group will display significantly lower between-trial improvements in self-efficacy, acceptance of anxiety, and suffocation/entrapment concerns relative to the other two treatment groups (EO or ACC).

*Process Hypothesis 3:* Process-related variables mediate the relationship between exposure and fear.

*Hypothesis 3a:* When considered separately, changes in threat expectancies, coping self-efficacy, and acceptance of anxiety will each mediate the association between exposure and fear reduction.

*Hypothesis 3b:* When combined into a single model, acceptance of anxiety will account for the greatest proportion of the mediated pathway between exposure and fear reduction.

*Process hypothesis 4:* Mediational pathways will vary as a function of treatment condition.

*Hypothesis 4a:* Among ACC participants, the relationship between exposure and fear will be mediated most strongly by acceptance of anxiety.

*Hypothesis 4b:* Among SUP participants, the relationship between exposure and fear will be mediated most strongly by self-efficacy.

*Hypothesis 4c:* Among EO participants, the relationship between exposure and fear will be mediated most strongly by threat expectancies.

# CHAPTER 3: METHOD

## 3.1 Participants

Study participants (N = 59) were recruited from the general Austin community (n = 6), and from the University of Texas Department of Psychology undergraduate research pool (n = 53). In return for their participation, community participants received $30, and university students received introductory psychology credit. Participants were assigned such that the proportion of community participants was roughly equal across conditions .

To qualify for the study, all participants were required to demonstrate marked claustrophobic fear, as indicated by their inability to remain in one of our claustrophobia test chambers with a fear level less than 40 on a 100 point scale (averaged across two consecutive one-minute trials) . Exclusion criteria included 1) presence of a medical condition (i.e., pregnancy, respiratory disorder, cardiovascular disease) that would contraindicate participation in one or more treatment or assessment activities; or 2) current DSM-IV diagnosis of bipolar disorder, schizophrenia, paranoid or other psychotic disorder, or organic mental disorder.

Participants ranged in age from 18 to 65 years of age and comprised 78.00% women and 41.70% minorities.

## 3.2 Experimental Design

Participants were randomly assigned to one of three conditions, which were matched on duration of exposure (30 minutes): (a) Exposure with instructions to accept the emotional response (ACC); (b) Exposure with instructions to suppress the emotional response (SUP); or (c) Exposure with no emotion-regulation instructions (EO). Theory-

relevant process data (peak fear, threat expectancies, phobic self-efficacy, and acceptance of anxiety) were gathered between trials during the treatment session. Primary outcome measures (fear ratings) were gathered during behavioral approach tests (BATs) at 3 timepoints: prior to treatment, immediately following treatment, and at a one-month follow-up. Secondary outcome measures included self-reported claustrophobia symptoms (assessed at pre-treatment and follow-up) and HR reactivity.

## 3.3 Assessment

### 3.3.1 Diagnostic Assessment

Clinical status was assessed using the specific phobia module of the Structured Clinical Interview for DSM-IV diagnoses (SCID; First, Spitzer, Gibbon, & Williams, 1994).

### 3.3.2 Outcome Measures

#### 3.3.2.1 Primary Outcome Measure: Fear During BATs

In order to measure participants' fear response when entering an enclosed space, four Behavioral Assessment Tests (two trials each of BAT-1 and BAT-2) were performed at each of the three assessment points. The BATs were procedurally identical but used different claustrophobia chambers, both of which were located in a darkened room in our laboratory. In order to minimize extraneous participant exposure to these chambers, the participant was only allowed in the room during the BAT and treatment procedures.

##### 3.3.2.1.1 BAT Stimuli

In order to accurately assess the generalizability of treatment gains, the two stimuli were intended to differ from one another significantly, ideally on each sensory

modality. Both of the BATs were small wooden boxes of the following dimensions: 41 cm × 76 cm × 180 cm. They differed from each other in the following ways.

1. The BAT-1 chamber was placed upright, so that the participant would enter and remain standing in the chamber. The BAT-2 was placed flat on the ground, like a coffin, so that the participant would lie prone.

2 The interior walls of the BAT-2 chamber were lined with sandpaper, whereas the interior walls of the BAT-1 chamber were lined with soft Styrofoam, and the participant's head would rest on a pillow.

3. The BAT-1 chamber was internally lit by a string of Christmas lights; the BAT-2 chamber was dark.

4. The BAT-1 chamber was lined with car air fresheners that emitted a fake pine scent; the BAT-2 chamber was lined with small pieces of bar soap. Both the soap and the air fresheners were changed periodically to maintain these scents.

5. An electric fan was placed on top of the BAT-1 chamber, whose vibrations resonated through the chamber loudly. The BAT-2 chamber was completely silent.

**3.3.2.1.2 BAT Procedure**

The experimenter began each BAT trial by introducing the participant to the chamber and providing the following instructions: "*Now, we are going to enter the room, and I will ask you to enter the chamber. When you enter the chamber, I will lock the door. However, it is important that you understand that you can leave the chamber at any time if you get too uncomfortable. If you knock on the inside of the chamber, I will immediately undo the lock and open the door. Otherwise, I will signal to you that the trial is over by opening the door."*

During the trial, heart rate and length of time spent in the chamber were monitored. After 60 seconds, the chamber door was opened and the participant was instructed to exit, unless the participant chose to exit early[4]. After exiting the chamber, the participant provided ratings of beginning, ending, and peak fear on a Likert scale ranging from 0 (no fear) to 100 (extreme panic).

*Peak fear rating.* The primary outcome measure was a composite measure of the participant's peak fear on BATs 1 and 2, averaged across both 1-minute trials at each assessment point (see rationale below).

*Reliable change.* In order to verify that observed change in peak fear ratings over time was not simply due to measurement error, we calculated a reliable change index (RCI; Jacobson & Truax, 1991) for each participant, using the formula,

$$RCI = X_2 - X_1 / S_{diff}$$

where

$$S_{diff} = \sqrt{(2(S_E)^2)}$$

and

$$S_E = S_1\sqrt{(1-r_{xx})}.$$

In calculating RCI, we assumed $r_{xx,}$ the reliability of the fear measure, to be .8, and we calculated $S_1$, the SD of the fear measure, from observed data. We then determined reliable change between any two observations by comparing the obtained RCI with a cutoff value of 1.96. If $|RCI| > 1.96$, the observed change was deemed reliable.

[4] Of 59 participants, 3 asked to exit prior to 60 seconds on BAT-1, and 6 asked to exit early on BAT-2.

#### 3.3.2.2 Secondary Outcome Measures

*Claustrophobia Questionnaire* (CLQ; Radomsky, Rachman, Thordarson, McIsaac, & Teachman, 2001). The CLQ is a 26-item measure assessing two factors: suffocation and restriction concerns. The authors report that the scale has good internal consistency, test-retest reliability, and predictive validity. The CLQ includes two subscales: *Suffocation Scale (SS) & Restriction Scale (RS).* The SS is a 14-item self-report scale assessing fear of suffocation. Items (e.g. "Working under a car for 15 minutes.") are rated on a 0 (not at all anxious) to 4 (extremely anxious) Likert scale. The SS is a 12-item self-report scale assessing fear of entrapment. Items (e.g., "Standing for 15 minutes in a straight jacket") are rated on a 0 (not at all anxious) to 4 (extremely anxious) Likert scale. Both subscales have shown good psychometric properties (Rachman & Taylor, 1993).

*Heart-rate (HR) reactivity during BATs* was measured using an ambulatory heart-rate monitor (Polar model RS800; Polar Electro, Inc.; 1111 Marcus Avenue, Suite M15, Lake Success, NY), which registered both peak and average HR for each exposure trial. HR reactivity was defined as the difference between the average HR recorded during the trial and the participant's recovery HR (average HR recorded over a 3-minute period at the conclusion of the study session)[5].

### 3.3.3 Process Measures

In order to examine the mechanisms of fear change during treatment, the following measures were collected during each of the six 5-min. treatment trials (see 3.4.2.2):

[5] HR difference scores for pre-treatment and posttreament BATs were calculated using session 1 recovery HR, whereas HR difference scores for FU BATs were calculated using session 2 recovery HR.

*Subjective fear indices*. Immediately after each trial, participants rated beginning, ending, and peak levels of fear they had experienced while in the chamber on a Likert scale ranging from 0 = no fear to 100 = extreme fear.

*Threat expectancies.* Immediately before each trial, participants completed a modified version of the Claustrophobia Concerns Questionnaire (CCQ; Valentiner et al., 1996). The original CCQ is an empirically derived 8-item scale intended to measure threat expectancies in claustrophobia by asking participants to rate their concern about suffocation and entrapment on a Likert scale ranging from 0 (no concern) to 100 (extreme concern). This scale has displayed high internal consistency and test-retest reliability (Valentiner et al., 1996). To reduce the number of ratings taken at each treatment trial, we used only two of the original four suffocation items, and two of the four entrapment items. In the current sample, the measure displayed good reliability ($\alpha = .84$)[6].

*Coping self-efficacy.* Prior to each treatment trial, participants completed a modified version of the claustrophobia-specific Coping Self-Efficacy Questionnaire (CSEQ; Valentiner et al., 1996). The original CSEQ is an empirically-derived 4-item measure intended to measure an individual's confidence in their ability to manage anxiety symptoms while in an enclosed space. Items such as "Estimate your confidence in being able to reduce your fear to a manageable level…" are measured on a Likert scale ranging from 0 (no confidence) to 100 (extreme confidence). The scale has displayed high internal consistency and test-retest reliability (Valentiner et al., 1996). The modified version used in the present study used only two of the original four items, and displayed good reliability ($\alpha = .85$).

[6] Reliability statistics for all process measures were calculated on measures collected prior to the first treatment trial.

*Acceptance of anxiety.* Prior to each treatment trial, participants completed a 2-item author-developed measure of acceptance of anxiety. Participants responded on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree" to the following items: "My anxiety does not bother me" and "It is bad to feel anxious" (reverse scored). Reliability analyses yielded $\alpha = .33$. Therefore, these items were analyzed separately.

*Heart-rate reactivity (HR)* scores were obtained and calculated according to the same procedure as outcome HR reactivity scores (see 3.3.2.2).

### 3.3.4 Putative Moderators

In order to identify moderators of the relationship between emotion regulation strategy and treatment efficacy (change in primary outcome measures), the following measurements were taken prior to treatment.

*Experiential avoidance* was measured using the 16-item Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004; Bond & Bunce, 2003). The AAQ is a 16-item self-report questionnaire that measures two factors: acceptance/avoidance of unpleasant internal experiences, and willingness to pursue goals in the presence of those experiences. Items such as "I'm not afraid of my feelings" and "Worries can get in the way of my success" are presented on a 7-point Likert scale, ranging from "never true" to "always true." Eight of the items are reverse scored, and a higher total score indicates greater psychological acceptance. The scale has good concurrent validity with regard to measures of emotional disturbance (Hayes et al., 1996).

*Tendency to suppress unwanted thoughts* was measured using the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994). The WBSI is a 15-item self-report questionnaire measuring the frequency with which the respondent experiences and

tries to prevent the experiences of unwanted thoughts. Items such as "I have thoughts I cannot stop" and "There are things I prefer not to think about" are presented on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The measure correlates with obsessive thinking and depressive and anxious affect, and has been found to display good internal consistency and test-retest stability (Muris, Merckelbach, & Horselenberg, 1995).

*Tendency to suppress emotional expressivity* was measured using the Suppression subscale of the Emotion Regulation Questionnaire (ERQ; Gross and John, 2003). This self-report questionnaire is comprised of 10 items measuring tendencies to engage in two emotion regulation strategies: cognitive reappraisal (e.g., "When I want to feel less negative emotion, I change the way I'm thinking about the situation.") and expressive suppression (e.g., "I keep my emotions to myself."). The authors reported high internal consistency for both the reappraisal ($\alpha = .79$) and suppression ($\alpha = .73$) subscales.

*Baseline severity* was measured using the CLQ collected at the initial assessment session.

*Community status.* Participants were classified according to whether they were undergraduates recruited through the research subject pool or were other community participants.

*Degree of impairment*. Participants were classified according to whether they endorsed significant phobia-related impairment (DSM-IV criterion E) during the CIDI interview.

### 3.3.5 Manipulation Checks

*Treatment credibility and expectancy* were assessed using a modified version of the Credibility/Expectancy Questionnaire (CEQ), which is a widely used measure of treatment credibility and expectancy. According to the authors, this 6-item scale assesses two factors, credibility and expectancy, and has demonstrated high internal consistency within each factor (Cronbach's α values ranging from .81 to .86 for credibility and from .79 to .90 for expectancy) and test-retest reliability (Devilly & Borkovec, 2000).

*Comprehension of instructions* was assessed using a 2-item author-constructed scale. Responses were provided on a 5-level Likert scale ranging from "Strongly Disagree" to "Strongly Agree" to the following two items: (1) "During the procedure, I should try to control my emotions as much as possible"; and (2) "The procedure will work better if I allow myself to feel whatever feelings I have". We derived a single, unipolar total score by calculating the mean of the first item and the reverse-scored second item. This score falls on a 1-5 scale, in which a lower score indicates that the participant views emotion-acceptance strategies as more effective at facilitating treatment efficacy (as per the ACC instructional set), whereas a higher score indicates that an emotion-suppression strategy is seen as more effective[7]. Among the current sample, this measure demonstrated good reliability (α .= 84).

*Emotion-regulation strategies* were assessed repeatedly through the session. After each treatment trial, participants responded to the following item, "While I was in the chamber, I made a CONSCIOUS EFFORT to…" on a 10-level Likert scale ranging

[7] Participants in the EO condition were provided with no instructions regarding emotion regulation strategies. Therefore, among these participants, we interpret this score to reflect prior beliefs regarding the utility of these two emotion regulation strategies.

from 0 (“Allow my emotions to run their course”) to 100 (“Stay in control of my emotions”). The midpoint was labeled “Neither”.

Immediately after completing the entire exposure procedure, emotion regulation strategies were retrospectively assessed using the following 2 items: (a) “While in the chamber, how much of a conscious effort did you make to CONTROL your fear and anxiety?” and (b) “While in the chamber, how much of a conscious effort did you make to ACCEPT your fear and anxiety?” Participants responded on a Likert scale ranging from 1 (“No effort”) to 9 (“Strong effort”).

Unlike the measure of emotion regulation strategies that was employed after each trial (which used a single item treating control and acceptance as opposite poles of a single construct), this post-treatment measure treated these strategies as independent constructs.

*Attentional strategies* were measured immediately following the exposure procedure, using the following 2 items: (a) “While in the chamber, how much of a conscious effort did you make to DISTRACT yourself from what was going on?” and (b) “While in the chamber, how much of a conscious effort did you make to PAY ATTENTION to what was going on?” Participants responded on a Likert scale ranging from 1 (“No effort”) to 9 (“Strong effort”). Because the experimental scripts did not differ on their instructions regarding attention regulation (both recommended that the participant pay close attention during the procedure), the inclusion of these items served an exploratory purpose. Although we were curious about potential interactions between attention- and emotion-regulation strategies, no *a priori* hypotheses were advanced regarding these items.

## 3.4 Procedure

### 3.4.1 Screening

Participants were gathered from two sources: the UT Introductory Psychology undergraduate pool, and the local Austin community.

*Undergraduate participants* (n = 3200) responded to a 2-item online questionnaire that asked them to rate their subjective fear associated with 1) entering an enclosed space and 2) being locked in an enclosed space, on a 4-point Likert scale (0 = no fear to 3 = extreme fear). Those who reported an average score of 2 (moderate fear) or higher on the questionnaire (n = 469) were emailed an invitation to attend the experimental session for further screening and possible participation. Those who responded expressing interest (n = 123) were then contacted over the phone by a lab staff member, who assessed eligibility and self-reported claustrophobia and then invited qualifying participants (n = 63) to attend the first session.

*Community participants* (n = 30) made initial contact with us via phone or email after learning of the study via word-of-mouth, or via referrals from community therapists and physicians. These participants were then contacted over the phone by a lab staff member and screened in the same manner as the undergraduate participants. Those who appeared to qualify (n = 7) were invited to attend the first session.

### 3.4.2 Experimental Session 1

Upon arriving at the laboratory, the participant provided informed consent, filled out questionnaire packets, and underwent the SCID claustrophobia diagnostic interview. The participant then completed the pre-treatment BAT procedure (see section 3.3.2.1), to assess initial levels of claustrophobic fear. Following the BAT, the participant was

randomly assigned to listen to one of three audiotaped instructional sets, and then to undergo 30 minutes of exposure therapy. Finally, the participant completed a post-treatment BAT procedure, which was procedurally identical to the first.

#### 3.4.2.1 Condition-Specific Instructions (see Appendix D)

Instructional sets for all participants began with a brief (2 paragraph) overview of the exposure procedure, including a rationale for its efficacy. EO participants received no further instructions before beginning treatment, or in between treatment trials. In contrast, ACC and SUP participants then listened to additional, condition-specific instructional sets that were equal in duration and parallel in rhetorical structure. These instructional sets were based closely on those used in the Campbell-Sills et al. (2006) study, which were obtained from the authors.

In order to improve compliance with the instructions, prior to each treatment trial the experimenter provided a brief (< 30 sec.) restatement of the main idea of the conditionally appropriate instructional set to those in the ACC and SUP conditions.

*Suppression condition.* Participants in this condition were instructed to "try not to show what you are feeling, and attempt to minimize the amount of anxiety and other emotions you feel in response to the situation". They were told that attempts to control emotion are often appropriate and effective, and they were provided with examples of situations in which emotional control is possible. Prior to each treatment trial, they were reminded that 'the exercise will be far more effective if you make a conscious effort to control your feelings of fear, and to prevent yourself from experiencing heightened anxiety."

*Acceptance condition.* Participants in this condition were instructed to "try to give up the struggle to suppress or control" emotions. They were told that attempts to control emotions are often counterproductive and ineffective, and they were provided with examples of situations in which emotional control is impossible. Prior to each treatment trial they were reminded that "the exercise will be far more effective if you make a conscious effort NOT to control your feelings of fear, and to allow yourself to experience heightened anxiety."

Prior to beginning the treatment, participants completed pre-treatment measures of treatment credibility and comprehension of instructions (see section3.3.5).

#### 3.4.2.2 Exposure Procedure

All participants underwent a total of 30 minutes of *in vivo* exposure to the claustrophobia chamber used in BAT-2. For the majority of participants (n=57), the exposure session comprised a total of six 5-minute trials. However, for participants who were unable to remain in the chamber for five minutes at a time (n=2), up to nine trials were needed.

### 3.4.3 Experimental Session 2: Follow-Up Assessment

All participants were asked to return to the laboratory 30 days later for a follow-up assessment. At this session, participants first completed a questionnaire battery that included the CLQ, AAQ, and WBSI. They then completed a BAT assessment that was procedurally identical to the pre-and post-treatment BATs. Finally, participants were provided with a written debriefing statement that indicated the nature and purpose of the experiment and described the three treatment conditions. They were also provided with referrals to community and/or university mental health resources.

### 3.4.4 Steps for Enhancing Treatment Integrity

In order to assure the greatest possible treatment integrity, assessments and treatments were manualized and administered by trained experimenters.

*Manualized protocol*. The protocol (see Appendix A) was divided into separate sections for each of the two sessions. Scripts were provided throughout the manual to be read aloud verbatim by experimenters.

*Experimenter training*. The training of experimenters involved a) didactic orientation to the project provided by the PI; b) role-plays of procedures with trained experimenters; and c) PI observation of assessment and treatment procedures. Experimenters were observed, monitored and provided with feedback regarding adherence to the experiment protocol. Experimenters were not allowed to administer assessments or treatments until they had demonstrated a high degree of proficiency with the protocol. Experimenters also underwent periodic observation by the PI with respect to adherence to the treatment protocol.

# CHAPTER 4: STATISTICAL ANALYSES

## 4.1 Group Characteristics

To confirm that the randomization procedure produced similar groups, we examined differences in continuous measures using analyses-of-variance (ANOVA) and differences in categorical measures using Chi-square analyses. Table 1 presents means and standard deviations of the demographic and putative moderator measures across the three treatment conditions.

Table 1. *Experimental group characteristics at baseline*

| | Acceptance (n=20) | Suppression (n=19) | Exposure Only (n=20) |
|---|---|---|---|
| | *M (SD)* | *M (SD)* | *M (SD)* |
| *Demographic Variables* | | | |
| Age | 21.90 (10.19) | 22.05 (11.42) | 19.90 (5.34) |
| Gender (% Male) | 20.00 | 31.60 | 15.00 |
| Comm. Status (% Psych. Student) | 90.00 | 89.50 | 90.00 |
| Race/Ethnicity | | | |
| African-American | 1 | | |
| American Indian | 1 | | 2 |
| Asian American | 1 | 1 | 3 |
| Caucasian | 12 | 12 | 11 |
| Latino | 5 | 6 | 4 |
| *Putative Moderator Variables* | | | |
| % SCID Diagnosis For Claustrophobia | 85.00 | 72.20 | 75.00 |
| AAQ-16 | 68.20 | 67.47 | 65.85 |

| | | | |
|---|---|---|---|
| | (7.60) | (11.06) | (8.74) |
| AAQ-16—Willingness | 25.52 | 24.68 | 24.65 |
| | (4.14) | (6.46) | (4.93) |
| AAQ-16—Action | 42.95 | 42.79 | 41.20 |
| | (4.73) | (6.38) | (4.93) |
| WBSI | 54.65 | 50.52 | 49.45 |
| | (7.88) | (12.62) | (9.12) |
| WBSI—Thought Suppression | 28.75 | 26.79 | 25.85 |
| | (4.14) | (6.67) | (5.06) |
| WBSI—Intrusive Thoughts | 15.60 | 15.05 | 14.10 |
| | (2.41) | (3.27) | (3.13) |
| WBSI—Self-distraction | 10.30 | 8.68 | 9.50 |
| | (2.99) | (3.84) | (3.05) |
| ERQ | 44.85 | 42.26 | 41.6 |
| | (11.51) | (7.66) | (6.65) |
| ERQ—Reappraisal | 29.55 | 29.79 | 29.65 |
| | (6.89) | (5.06) | (5.91) |
| ERQ—Suppression | 15.30 | 12.47 | 11.95 |
| | (5.90) | (4.96) | (4.59) |

*Note.* AAQ = Acceptance and Action Questionnaire; WBSI = White Bear Suppression Inventory; ERQ = Emotion Regulation Questionnaire; M = Mean; SD = Standard Deviation

No significant differences were found among the demographic variables. There was a difference in pre-treatment emotional suppression (ERQ-Suppression) that approached significance, $F$ (2, 56) = 2.40, $p < .10$. Post hoc comparisons revealed that ACC participants produced significantly higher scores on this index than EO participants,

$p < .05$, and higher scores than SUP participants, $p < .10$. We therefore included this measure a covariate in our outcome analyses.

### 4.2 Manipulation Check Data

Group means for all measures are displayed in Table 2.

Table 2. *Manipulation check data*

| | Acceptance (n=20) | Suppression (n=19) | Exposure Only (n=20) |
|---|---|---|---|
| | *M (SD)* | *M (SD)* | *M (SD)* |
| CEQ-Credibility | $74.44_a$ (18.42) | $85.38_b$ (9.76) | $72.51_a$ (17.08) |
| CEQ-Expectancy | $63.69_a$ (18.89) | $63.63_a$ (12.94) | $59.98_a$ (19.20) |
| Comprehension of Instructions (1= acceptance; 5=suppression) | $2.05_a$ (1.21) | $4.63_b$ (0.40) | $3.13_c$ (1.19) |
| *Emotion Regulation Strategies* | | | |
| Conscious effort to suppress emotions (Averaged across 6 trials) | $33.08_a$ (4.56) | $87.78_b$ (4.81) | $53.83_c$ (4.56) |
| Accept emotions | $7.40_a$ (1.96) | $5.84_b$ (2.90) | $5.30_b$ (1.66) |
| Control emotions | $4.60_a$ (2.89) | $8.26_b$ (1.63) | $6.40_c$ (2.06) |
| *Attentional Strategies* | | | |
| Distract myself | $5.30_a$ (3.08) | $7.53_b$ (1.90) | $4.70_a$ (2.32) |
| Pay attention | $5.95_a$ (2..50) | $4.53_b$ (2.32) | $3.95_c$ (1.82) |

*Note.* Means in the same row that do not share subscripts differ at $p < .05$ in post hoc pairwise comparisons.

*Treatment credibility and expectancy.* To confirm that our treatment groups did not differ significantly on credibility or expectancy, we examined group differences on the subscales of the CEQ using one-way ANOVAs. We found no significant differences on the Expectancy subscale, though we did find significant differences Credibility, $F$ (2, 55) = 3.770, $p < .03$. Post hoc comparisons revealed that SUP participants found the treatment to be significantly more credible than did participants in the ACC group, $p < .04$, and EO group, $p < .02$ .

*Comprehension of instructions.* To confirm that the instructional sets were sufficiently divergent, we examined the 2- item instruction comprehension scale using one-way ANOVAs and found significant differences between treatment groups, $F$ (2, 56) = 31.67, $p < .01$. Post hoc comparisons revealed that SUP participants viewed emotion suppression as a more useful strategy for use during the exposure procedure than did EO participants ($p < .01$), who, in turn, viewed emotion suppression as more useful than did ACC participants ($p < .01$).

*Emotion regulation strategies.* To confirm that participants in the ACC and SUP groups were employing the emotion regulation strategies in a manner consistent with instructions, we examined group differences on the 1-item measure of self-reported emotion regulation strategies over the course of six treatment trials using a repeated measures ANOVA. As expected, treatment groups differed, $F$ (2) = 34.24, $p < .01$, such that SUP participants made a significantly greater effort to control their emotions than did EO participants, $p < .01$, who in turn made a significantly greater effort to control their

emotions than did ACC participants, $p < .01$. This suggested that the manipulation was successful in producing differential usage of strategies (see Figure 1).

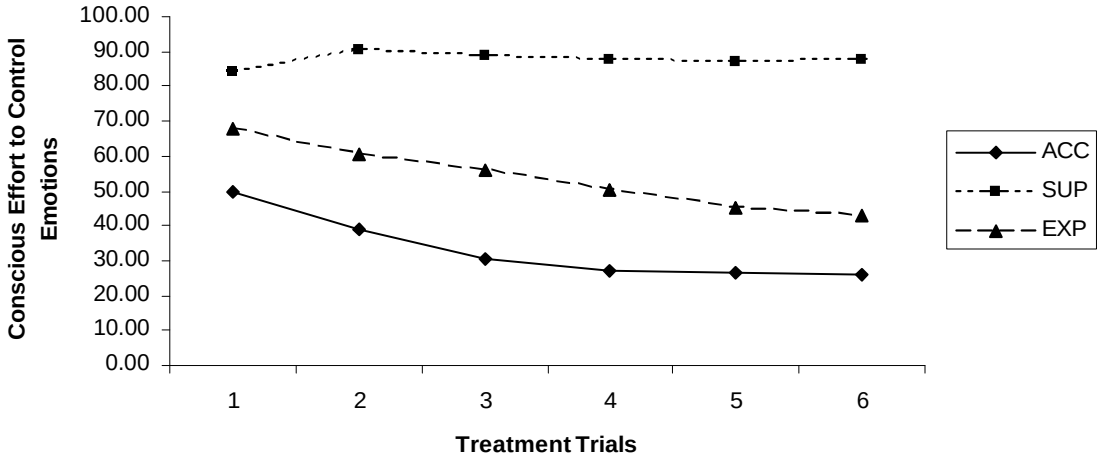


Figure 1. *Emotion regulation strategies over the course of six treatment trials.*

Unexpectedly, we also found a main effect for time, $F$ (5) = 9.25, $p < .01$, indicating that participants were more likely to engage in emotion-acceptance strategies in later treatment trials, and a time × group interaction, F (10) = 3.04, $p < .01$, indicating that the treatment groups differed in the degree to which their strategies changed over the course of treatment. ACC participants displayed a greater increase in the use of emotion-acceptance strategies over the course of treatment than did EPX participants, $p < .01$, who in turn displayed a greater increase than did SUP participants, $p < .01$. Post hoc comparisons indicated, however, that all three groups differed significantly from one another at each of the 6 time points ($p <. 05$).

We also examined group differences in emotion regulation strategies by examining the 2-item emotion regulation measure taken immediately following the exposure procedure. Consistent with prediction, a one-way ANOVA revealed a

significant difference in self-reported emotional acceptance strategies, $F$ (2) = 4.82, $p$ < .02, such that ACC participants were more likely to report having used these strategies than SUP ($p$ < .01) and EO participants ($p$ < .04). Also, we found a significant difference in self-reported emotional suppression strategies, $F$ (2) = 12.743, $p$ < .01, such that SUP participants were more likely to report having used these strategies than were EO participants ($p$ < .02), who were in turn more likely to report having used these strategies than were ACC participants ($p$ < .02). Taken together, these findings provide further evidence that experimental assignment produced differential usage of emotion regulation strategies. See Figure 2.

Unlike the measures of self-reported emotional strategies that were taken after each treatment trial, which presented a forced choice between strategies, this measure allowed participants to retrospectively report the usage of *both* strategies. In order to determine the degree to which these strategies were exclusive of one another, we computed correlation coefficients between these two measures. Unexpectedly, we found that the measures of usage of these two strategies were not significantly correlated, ρ = -.07. That is to say, the use of emotional suppression strategies did not exclude the use of emotional acceptance strategies.

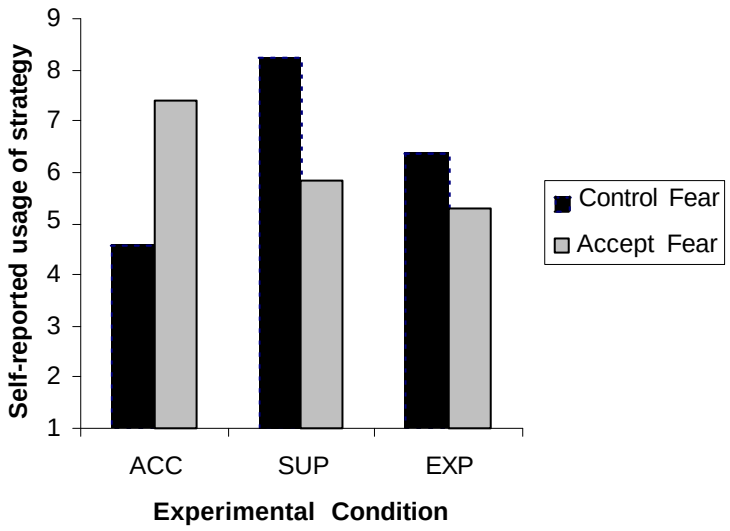


Figure 2. *Emotion regulation strategies used during treatment session.*

*Attention regulation strategies*. A one-way ANOVA revealed a significant difference in self-reported attempts to engage in self-distraction, $F(2) = 6.92$, $p < .01$, such that SUP participants were more likely to report having used these strategies than ACC ($p < .01$) and EO participants ($p < .01$). Also, we found a significant difference in self-reported attempts to "pay attention to what was going on," $F(2) = 4.25$, $p < .02$, such that ACC participants were more likely to report having paid attention than were SUP participants ($p < .05$) and EO participants ($p < .01$). Taken together, these findings provide evidence that experimental assignment produced differential usage of attentional strategies. See Figure 3.

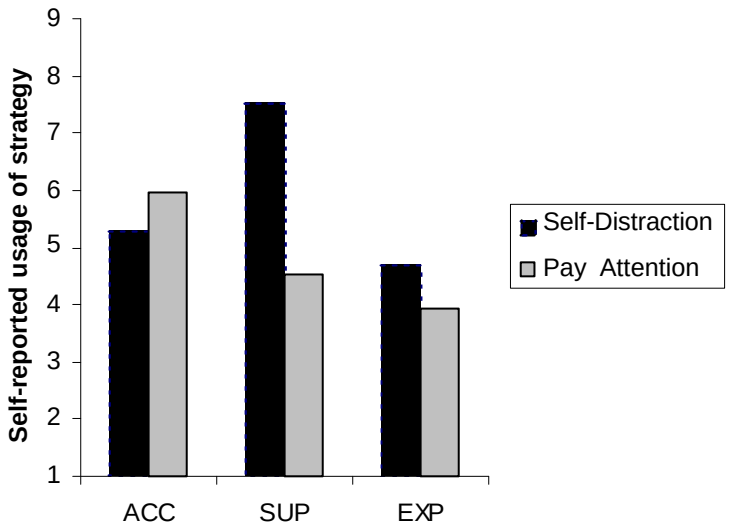


Figure 3. *Attentional strategies used during treatment.*

### 4.3 Outcome Analyses

#### 4.3.1 Composite Outcome Measures

To identify potential covariates, we regressed our primary outcome measures (BAT peak fear scores) at FU on selected dispositional and demographic measures, controlling for baseline fear. We found that BAT-2 fear was significantly correlated with pre-treatment emotional suppression (ERQ-S), $\beta = 0.33$, $p < .02$. Therefore, we included pre-treatment ERQ-S scores as a covariate, along with treatment credibility (CEQ-C), in all outcome analyses. Means and SD's of all outcome measures are displayed in Table 3.

To examine differences from pre-treatment to follow-up, we conducted a multivariate analysis of covariance (MANCOVA) on a composite index of peak fear (BATs 1 and 2), HR reactivity (averaged across BATs), and self-reported claustrophobic fear (CLQ). Across all treatment groups, participants displayed a significant decrease in the composite fear index, $F(4, 34) = 2.87$, $p < .04$. No interactions were found for time ×

group, time × ERQ-S, or time × CEQ-C, suggesting that neither treatment group assignment nor the covariates predicted fear change over time.

Table 3. *Means and Standard Deviations for Posttreatment and Follow-Up Fear Indices*

| | Acceptance | | | Suppression | | | Exposure Only | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pre *n*=20 | Post *n*=20 | FU *n*=15 | Pre *n*=19 | Post *n*=19 | FU *n*=16 | Pre *n*=20 | Post *n*=20 | FU *n*=18 |
| BAT 1 peak fear (0-100) | 61.00 (16.11) | 14.25 (16.41) | 18.00 (17.30) | 56.58 (19.37) | 8.42 (12.37) | 13.75 (17.56) | 54.25 (16.80) | 11.50 (17.02) | 13.33 (17.32) |
| BAT 2 peak fear (0-100) | 70.50 (16.13) | 11.00 (15.94) | 25.00 (29.09) | 70.00 (13.94) | 7.89 (9.90) | 17.81 (19.14) | 61.25 (14.95) | 7.50 (13.81) | 16.39 (17.32) |
| CLQ: Suffocation | 22.89 (9.42) | | 12.71 (6.94) | 20.00 (10.25) | | 12.74 (9.13) | 20.65 (10.78) | | 11.32 (8.56) |
| CLQ: Restriction | 28.58 (9.90) | | 17.84 (9.95) | 26.74 (9.43) | | 14.84 (10.13) | 28.55 (9.34) | | 15.37 (9.58) |
| HR Reactivity | 8.25 (8.87) | 1.72 (5.72) | 2.90 (8.98) | 12.69 (12..79) | 4.92 (6.93) | -0.94 (7.93) | 10.00 (5.16) | 1.43 (5.42) | 1.15 (5.20) |

*Note.* Pre = Pretreatment; Post = Posttreatment; FU = Follow Up; BAT = Behavioral Approach Test; CLQ = Claustrophobia Questionnaire; HR = Heart rate. HR Reactivity data are averaged across both BATs.

Similarly, all participants displayed a significant decline on all of the disaggregated measures: BAT-1 fear, $F(1) = 7.54$, $p < .01$, BAT-2 fear, $F(1) = 7.09$, $p < .02$, heart rate reactivity, $F(1) = 4.01$, $p < .05$, and CLQ, $F(1) = 4.06$, $p < .05$. No interactions were found for time × group, time × ERQ-S, or time × CEQ-C.

To examine differences in outcome measures from pre- to post-treatment, we conducted a multivariate analysis of covariance (MANCOVA) on a composite index of

peak fear (BATs 1 and 2) and HR reactivity (averaged across BATs)[8]. Across all treatment groups, participants displayed a significant decrease in the composite measure of fear, $F(3, 45) = 3.96$, $p < .02$. No interactions were found for time × group, time × ERQ-S, or time × CEQ-C, suggesting that neither treatment group assignment nor the covariates predicted fear change over time.

Similarly, all participants displayed a significant decline on the following disaggregated measures: BAT-1 fear, $F(1) = 5.57$, $p < .03$ and BAT-2 fear, $F(1) = 11.16$, $p < .01$. They also displayed a decline in heart rate reactivity that approached significance, $F(1) = 2.90$, $p < .10$. No interactions were found for time × group, time × ERQ-S, or time × CEQ-C.

### 4.3.2 Reliable Change Indices

To determine whether the treatment conditions differed in their ability to produce reliable change (RC), we conducted Chi-square analyses on the percentage of participants achieving RC on peak fear (BATs 1 and 2) and CLQ. On peak fear for BAT-2 (the BAT used in the exposure session), 100% of participants displayed RC at post-treatment and 85.5% displayed RC at follow-up. For BAT-1 (the generalization BAT), these values were 89.3% at post-treatment and 80.0% at follow-up. And on the CLQ, 43.8% of participants displayed RC at follow-up. On all measures, no differences were found between treatment groups.

[8] CLQ data were not collected at post-treatment because the CLQ is a general measure of real-world claustrophobia concerns, rather than claustrophobic concerns in the context of the current study. Therefore, we reasoned that this measure was too temporally stable to pick up any significant changes in claustrophobic fear immediately following treatment.

### 4.4 Moderator Analyses

For each between-groups comparison, we examined whether the effect of treatment condition was moderated by prerandomized individual factors such as experiential avoidance (AAQ), tendency to suppress unwanted thoughts (WBSI), and emotion regulation tendencies (ERQ).

We also investigated whether community status, degree of impairment, and baseline severity (CLQ and peak fear) moderated the effect of treatment condition on claustrophobic fear, as well as whether these factors were predictive of treatment response across treatment conditions.

For all analyses, stepwise linear regression models were created in which pre-FU change in peak fear was the criterion variable (BAT-1 and BAT-2 were analyzed separately). In the first block, we included the dummy-coded condition terms. On the second block, we added the moderator terms (categorical moderators were centered), and on the third block we added the condition × moderator interaction terms. If the interaction was significant, then moderation was inferred.

Community status was found to significantly predict reductions in BAT peak fear, $\beta = -24.48$, $t = -2.36$, $p < .03$, such that community participants appeared to display smaller reductions in fear than did psychology students. However, the interaction term was not significant.

For all other analyses, no main effect or interactions were found.

### 4.5 Clinically Meaningful Differences and Statistical Power

Because the present study has modest cell sizes, we investigated whether the lack of outcome differences could be attributed to low statistical power. Assuming that a

difference of 15 units in our primary outcome measure (BAT peak fear) would be clinically significant, and that the variability in this measure was approximately 15[9], we determined that we aimed to detect an effect size of $\delta = 1.00$. Using a power analysis software applet (Friendly, 2008), we determine that a sample size of 20 per cell would allow for sufficient power (.79) to detect such differences at posttreatment. Therefore, the current sample size allowed us to sufficient power to reject the null hypothesis that there are clinically meaningful differences between the different treatment conditions.

### 4.6 Treatment Process Analyses

#### 4.6.1 Analytic Overview

Individual growth-curve modeling (Francis, Fletcher, Stuebing, Davidson, & Thompson, 1991; Raudenbush & Bryk, 2002) was used to examine changes in theory-relevant process variables over the course of treatment trials. Unlike trend analysis strategies such as repeated measures ANOVA and MANOVA, which attempt to model trends in change at the group level, individual growth-curve modeling "focuses the study of change on interindividual differences in intraindividual change," (Francis et al., 1991; p. 30). This approach can be advantageous for a number of reasons, including its suitability to time-series study designs, its lack of a requirement of independent observations, and its lower risk of Type 1 error (Francis et al., 1991; Raudenbush & Bryk, 2002).

Our analyses proceeded according to three steps. In Step 1, we created individual growth curve models of the patterns of change over time in the variables of interest: fear, claustrophobic threat expectancies (comprised of suffocation and entrapment

[9] SD's for BAT peak fear measures ranged from 13.37 at pre-treatment to 22.21 at follow-up.

expectancies), self-efficacy, and acceptance of anxiety. This allowed us to test Process Hypotheses 1 and 2 (see section 2.2.3), that differential changes in fear and other process variables would be observed over the six treatment trials as a function of treatment condition. In Step 2, we evaluated the degree to which process variables served to mediate the relationship between exposure treatment and fear reduction (Process Hypothesis 3). To do so, we first tested each of these proposed mediational pathways separately, and then tested a combined model. In Step 3, we tested for the presence of mediational specificity across treatment groups (Process Hypothesis 4) by examining the pattern of mediational effects for each treatment condition separately.

### 4.6.2 Step 1: Differential Changes in Fear and Other Process Measures as a Function of Treatment Condition

All analyses were conducted using HLM version 5.05 (Raudenbush, Bryk, & Congdon, 2002). For each participant, a linear regression model was calculated, in which the relevant treatment process measure (e.g., fear) was predicted by exposure trial (1-6)[10]. These analyses yielded three parameters for each participant: (a) initial score level, which corresponds to the intercept term in the Level 1 model; (b) score change per trial, which corresponds to the linear coefficient in the Level 1 model, and (c) score change per trial squared[11], which corresponds to the quadratic coefficient in the Level 1 model. For example, where fear is the dependent variable, the Level 1 model takes the form:

$$FEAR = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(TRIAL)^2 + r_{ij}$$

[10] Because 57 of 59 participants were able to complete the exposure procedure in 6 trials, we eliminated from process analyses the 2 cases who required more than 6 trials.

[11] A quadratic term was initially included for all models. If the model yielded any significant Level-2 predictors for the Level 1 quadratic term coefficient ($\beta_{2j}$) the term was retained. If not, the term was dropped. Thus, the models of CCQ-S and AA-2 do not contain quadratic terms.

where:

$\beta_0$ is the intercept, or the expected fear rating of a participant at TRIAL = 0

$\beta_1$ is the linear change in fear from one trial to the next

$\beta_2$ is the quadratic change in fear from one trial to the next

*r* is the error term, or the unique variance associated with each observation (exposure trial)

Between-group differences in the three β parameters were analyzed in the Level 2 models. Treatment groups were represented by dummy variables for ACC and SUP, with EO as the reference group. When possible, we also included the baseline value of the dependent measure as a covariate[12]. For example, where fear is the dependent variable, the Level 2 model takes the form:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Dummy}_{ACC}) + \gamma_{02}(\text{Dummy}_{SUP}) + \gamma_{03}(\text{FEAR}_{BL}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{Dummy}_{ACC}) + \gamma_{12}(\text{Dummy}_{SUP}) + \gamma_{13}(\text{FEAR}_{BL}) + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{Dummy}_{ACC}) + \gamma_{22}(\text{Dummy}_{SUP}) + \gamma_{23}(\text{FEAR}_{BL}) + u_{2j}$$

where:

$\gamma_0$ is the intercept

$\gamma_1$ is the expected change in β associated with assignment to the acceptance condition

$\gamma_2$ is the expected change in β associated with assignment to the suppression condition

[12] Baseline values were obtained from the pre-treatment BAT-2. These covariates were included for all variables except the two Acceptance of Anxiety measures, because these data were not gathered at baseline.

$\gamma_3$ is the expected change in $\beta$ per additional unit of fear at baseline above the grand mean[13]

$u_j$ is the error term, or the unique variance associated with each observation (individual participant)

All models are displayed in Figures 4-8. Equations for all models are provided in Appendix C.

*Process Hypothesis 1: A significant effect of exposure condition will be observed for initial fear activation and fear decline during treatment.*

*Hypothesis 1a: The ACC group will display significantly greater fear activation and between-trial fear reduction relative to the other two treatment groups (EO or SUP).*

*Hypothesis 1b: The SUP group will display significantly lower fear activation and between-trial fear reduction relative to the other two treatment groups (EO or ACC).*

Growth curve models for fear are displayed in Figure 4. Fear declined significantly over the course of the six trials, $b$ = -23.92, $t(53)$ = -7.06, $p < .001$; this relationship was found to be significantly curvilinear, $b$ = 1.97, $t(53)$ = 4.55, $p < .001$, such that fear decline slopes were steeper during the first half of the treatment trials. Baseline[14] fear predicted initial fear activation during the first treatment trial, $b$ = 0.78, $t(53) = 3.45$, $p < .01$.

Contrary to prediction, there was no significant condition effects for initial fear activation or fear decline during treatment.

[13] All baseline variables were centered at the grand mean.

[14] For all process measures, *baseline* refers to the measure taken at pretreatment BAT using the coffin stimulus. *Initial* refers to the predicted value of that variable at treatment trial = 0.

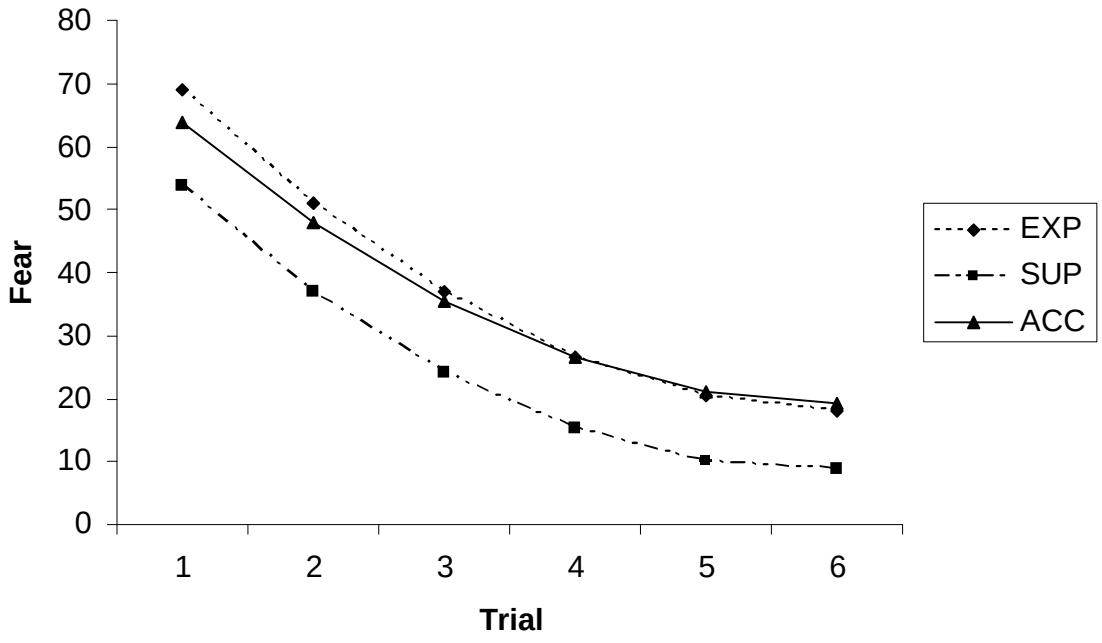


Figure 4. *Decline in Fear Across Exposure Trials (controlling for fear at baseline)*

*Process Hypothesis 2: A significant effect of exposure condition will be observed for the putative mediators of fear reduction (self-efficacy, acceptance of anxiety, and suffocation/entrapment concerns) during treatment.*

*Hypothesis 2a: The ACC group will display significantly greater between-trial improvements in self-efficacy, acceptance of anxiety, and suffocation/entrapment expectancies relative to the two other treatment groups (EO or SUP).*

*Hypothesis 2b: The SUP group will display significantly lower between-trial improvements in self-efficacy, acceptance of anxiety, and suffocation/entrapment expectancies relative to those assigned to the EO group.*

Growth curve models for process variables are displayed in Figures 5-8.

*Threat expectancies.* Consistent with prediction, entrapment expectancies declined significantly across trials, $b$ = -10.47, $t(53)$ = -3.252 $p$ < .01. Baseline entrapment expectancies predicted initial entrapment expectancies, $b$ = 0.67, $t(53)$ = 3.55, $p$ < .01. Treatment groups did not differ on initial entrapment expectancies. Contrary to prediction, SUP participants displayed a significantly more rapid decrease in entrapment expectancies than did EO participants, $b$ = -13.80, $t(53)$ = -2.87, $p$ < .01, and ACC participants displayed a more rapid decrease than EO participants to a degree that approached significance, $b$ = -8.29, $t(53)$ = 1.822, $p$ < .08. Differences were also found for the quadratic term, such that the relationship between trial and fear was significantly more curvilinear (steeper early decline) for SUP participants than for EO participants, $b$ = 1.75, $t(53)$ = 2.88, $p$ < .01.

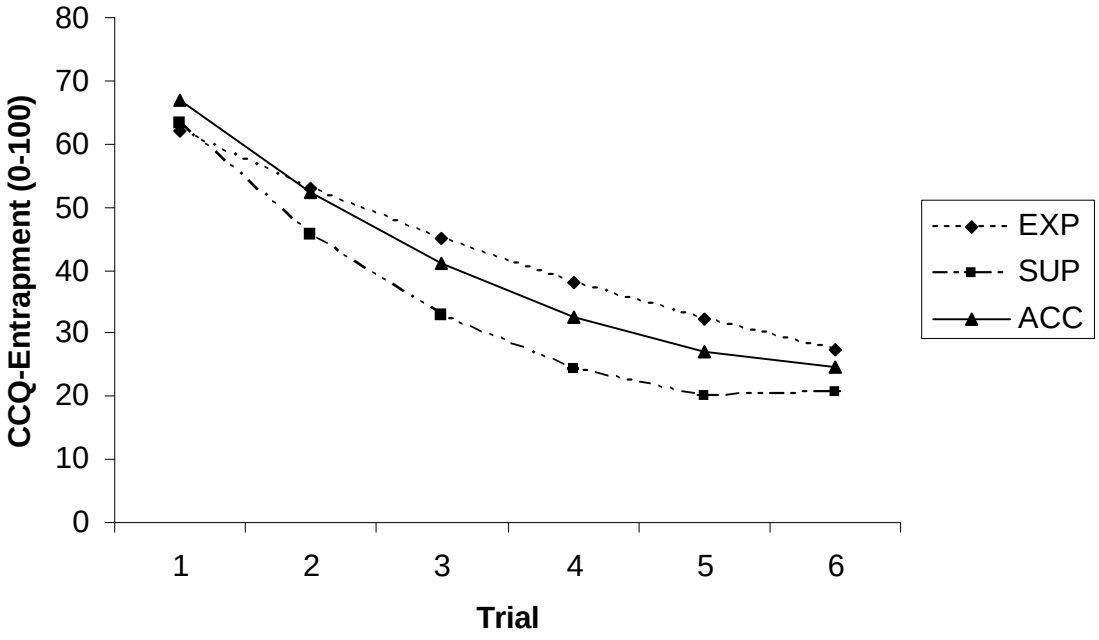


Figure 5. *Entrapment expectancies across exposure trials (controlling for baseline entrapment expectancies)*

Consistent with prediction, suffocation expectancies declined significantly across trials, $b$ = -7.25, $t(53)$ = -7.10, $p$ < .001. Baseline suffocation expectancies predicted initial suffocation expectancies, $b$ = 0.83, $t(53)$ = -2.09, and change in suffocation expectancies, $b$ = -0.05, $t(53)$ = -2.09, $p$ < .05. Treatment groups did not differ on initial suffocation expectancies or change in suffocation expectancies.

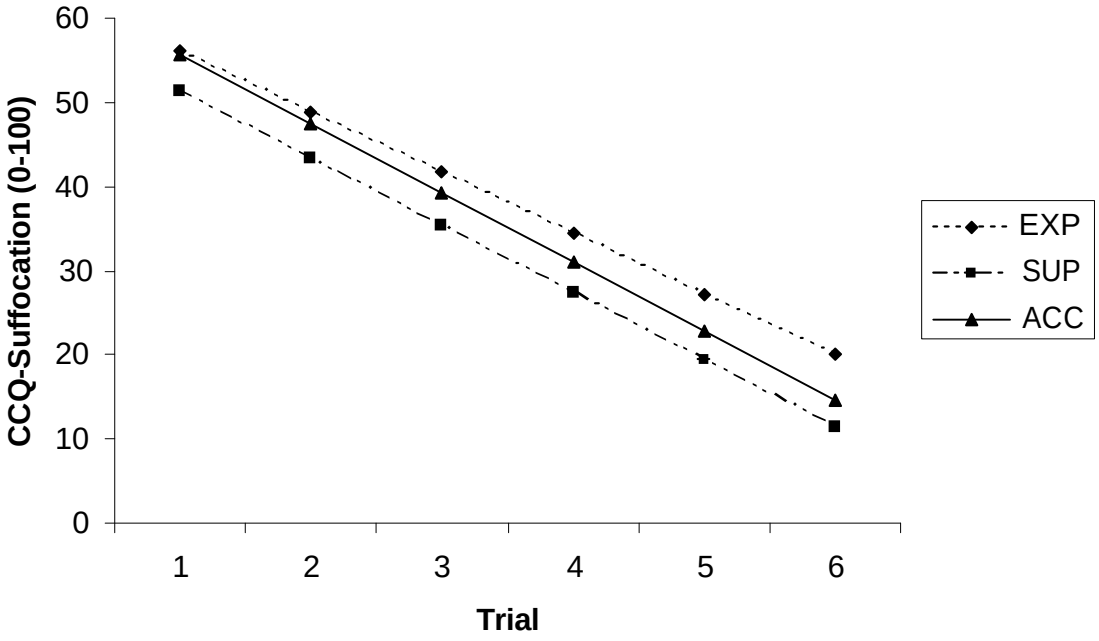


Figure 6. *Suffocation expectancies across exposure trials (controlling for baseline suffocation expectancies)*

*Coping self-efficacy* increased significantly across trials, $b$ = 15.21, $t(53)$ = 3.09, $p$ < .001, and this relationship was found to be curvilinear, $b$ = -1.48, $t(53)$ = 3.54, $p$ < .01, such that increases were more rapid toward the beginning of the session. Baseline self-efficacy scores predicted initial self-efficacy scores, $b$ = 0.45, $t(53)$ = 2.64, $p$ < .02.

Contrary to prediction, SUP participants displayed higher ratings of initial self-efficacy than EO and ACC participants, $b$ = 20.17, $t$ =2.51, $p$ < .02, and a more rapid

increase than EO and ACC participants at a degree approaching significance, $b$ = -8.62, $t$ = -0.44, $p < .07$.

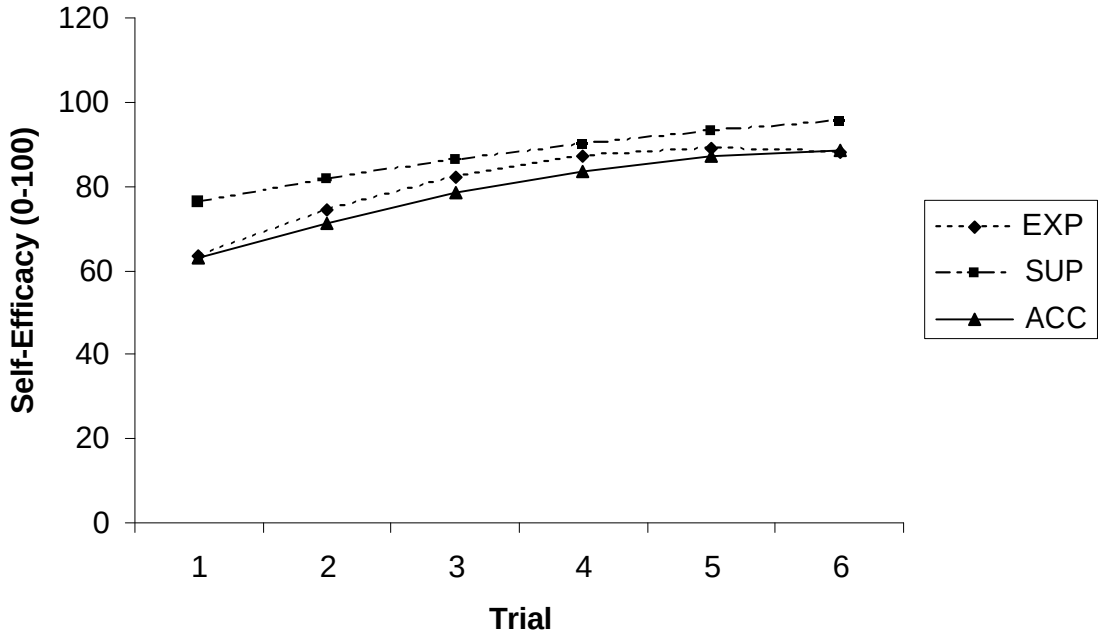


Figure 7. *Coping self-efficacy across exposure trials (controlling for baseline coping self-efficacy)*

*Acceptance of anxiety.* Because of the low intercorrelation of the 2 items measuring acceptance of anxiety measures, these items were analyzed separately. Scores on Acceptance of Anxiety-Item 1 (AA-1; "My anxiety does not bother me.") were found to increase significantly across time, $b$ = 0.25, $t$ = 4.73, $p < .01$. Contrary to prediction, groups did not differ on initial scores or change over time.

For Acceptance of Anxiety-Item 2 (AA-2; "It is bad to feel anxious."), scores did not change over time. Groups did not differ on initial scores or change over time. Thus, this item was dropped from further analyses.

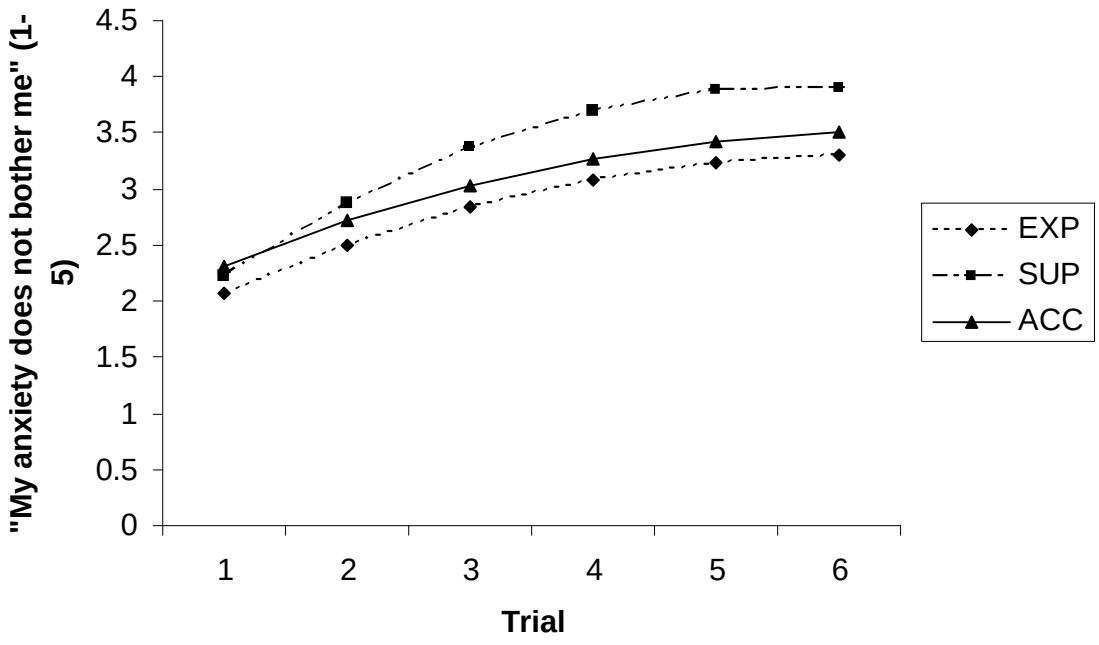


Figure 8. A*cceptance of anxiety (item 1) across exposure trials*

### 4.6.3 Step 2: Do Process Variables Account for Reductions in Fear?

Results of Step 1 indicated that over the course of the six treatment trials, fear and threat expectancies declined, while coping self-efficacy and acceptance of anxiety increased. Step 2 allowed us to test our next set of process hypotheses:

*Process Hypothesis 3: Process-related variables mediate the relationship between exposure and fear.*

*Hypothesis 3a: When modeled separately, changes in threat expectancies, coping self-efficacy, and acceptance of anxiety will each mediate the association between exposure and fear reduction.*

*Hypothesis 3b: When all process measured are combined into a single model, acceptance of anxiety will account for the greatest proportion of the mediated pathway between exposure and fear reduction.*

*Procedure for Testing and Measuring Mediational Pathways.*

*Mediation* refers to the indirect effect that an independent variable has on a dependent variable through a third variable (Figure 9).

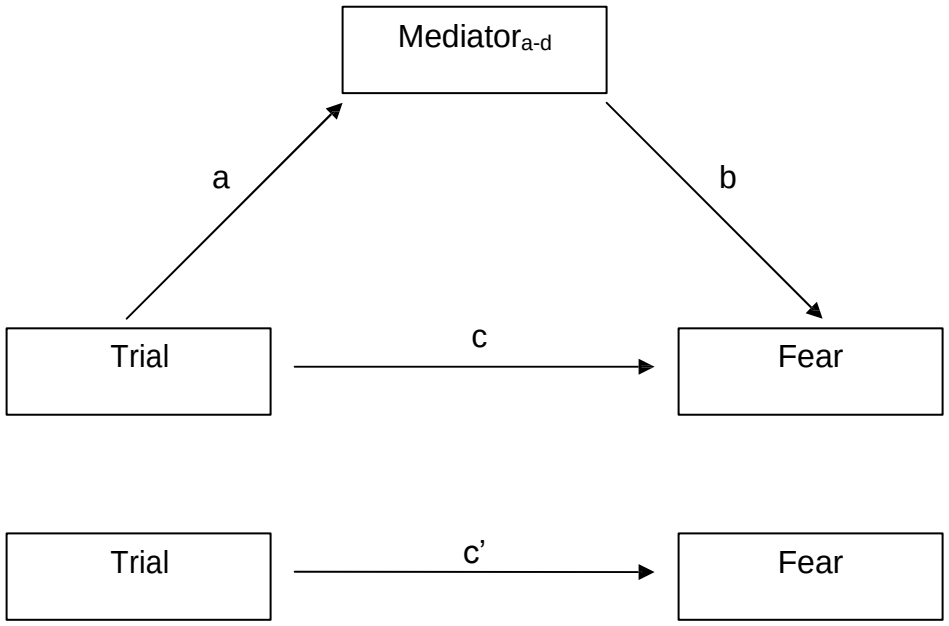


Figure 9. *Mediation.*

A demonstration of mediation requires the following steps (Baron & Kenny, 1986):

1) Regress the outcome variable (fear) on the initial variable (trial), and demonstrate that the initial variable is correlated with the outcome (path *c'* )
2) Regress the putative mediator variable (e.g., self-efficacy) on the initial variable (trial), and demonstrate that the initial variable is correlated with the putative mediator (path *a*)
3) Regress the outcome variable (fear) on both the putative mediator (e.g., self-efficacy) and the initial variable (trial), and demonstrate that
    a. the mediator is correlated with the outcome variable and (path *b*)

b. the correlation between the initial and outcome variables is significantly attenuated.

For steps 1, 2, and 3a of this mediation test, we conducted regression analyses within the HLM 5.0 platform. In our models, all mediational links were thought to operate at Level 1 (exposure→mediator→fear), thus termed *lower level mediation* (Kenny, Korchmaros, & Bolger, 2003)[15].

Regarding step 3b, there are a number of ways to determine the significance of the attenuation in the predictor-outcome relationship (Mackinnon, Lockwood, Hoffman, West & Sheets, 2002). We chose to use PRODCLIN (Mackinnon, Fritz, Williams, & Lockwood, in press), a computer program that uses the distribution of the product of regression coefficients (corresponding to mediational pathways *a* and *b*) to compute asymmetric confidence intervals for the mediated effect (Mackinnon, 2008). This method is less prone to Type 1 error than are other common methods, such as the Sobel (1982) test (MacKinnon, Lockwood, & Williams, 2004; Pituch, Whittaker, & Stapleton, 2005). If the confidence interval generated by PRODCLIN did not contain 0, then a significant effect was inferred.

Finally, for each test of mediation, we estimated the proportion of the effect that the mediator accounted for ($P_M$) using the formula recommended by Shrout & Bolger (2002; as cited in Smits, Rosenfield, McDonald, & Telch, 2006).

$$P_M = (a \times b) / c$$

where:

*a* is the effect of TRIAL on the mediator

[15] Because no level-2 predictors were included in these mediational analyses, the regression models were computationally identical to those obtained via ordinary least squares (OLS) regression.

*b* is the effect of the mediator on FEAR

*c* is the total effect of TRIAL on FEAR

A final note on mediation testing: Some authors have stated that temporal precedence from predictor to mediator to outcome is necessary to establish a mediational relationship (MacKinnon, Fairchild, & Fritz, 2007). Within the current model, this requirement is fulfilled, since the mediator is measured prior to fear at each time point.

*Tests of Mediation.*

We were interested in four putative mediators: entrapment expectancies (CCQ-E), suffocation expectancies (CCQ-S), coping self-efficacy, and acceptance of anxiety (AA-1)[16]. We conducted two analyses. In the first, we tested each of our putative mediators in separate models. Those variables that demonstrated significant mediation in the first analyses were then combined into an integrated model featuring multiple mediators (Kenny, 2008; see Figure 10.

[16] We did not examine acceptance of Acceptance of Anxiety-Item 2 (AA-2) because no evidence for pathway a (TRIAL AA-2) was found in step 1 of the process analysis.

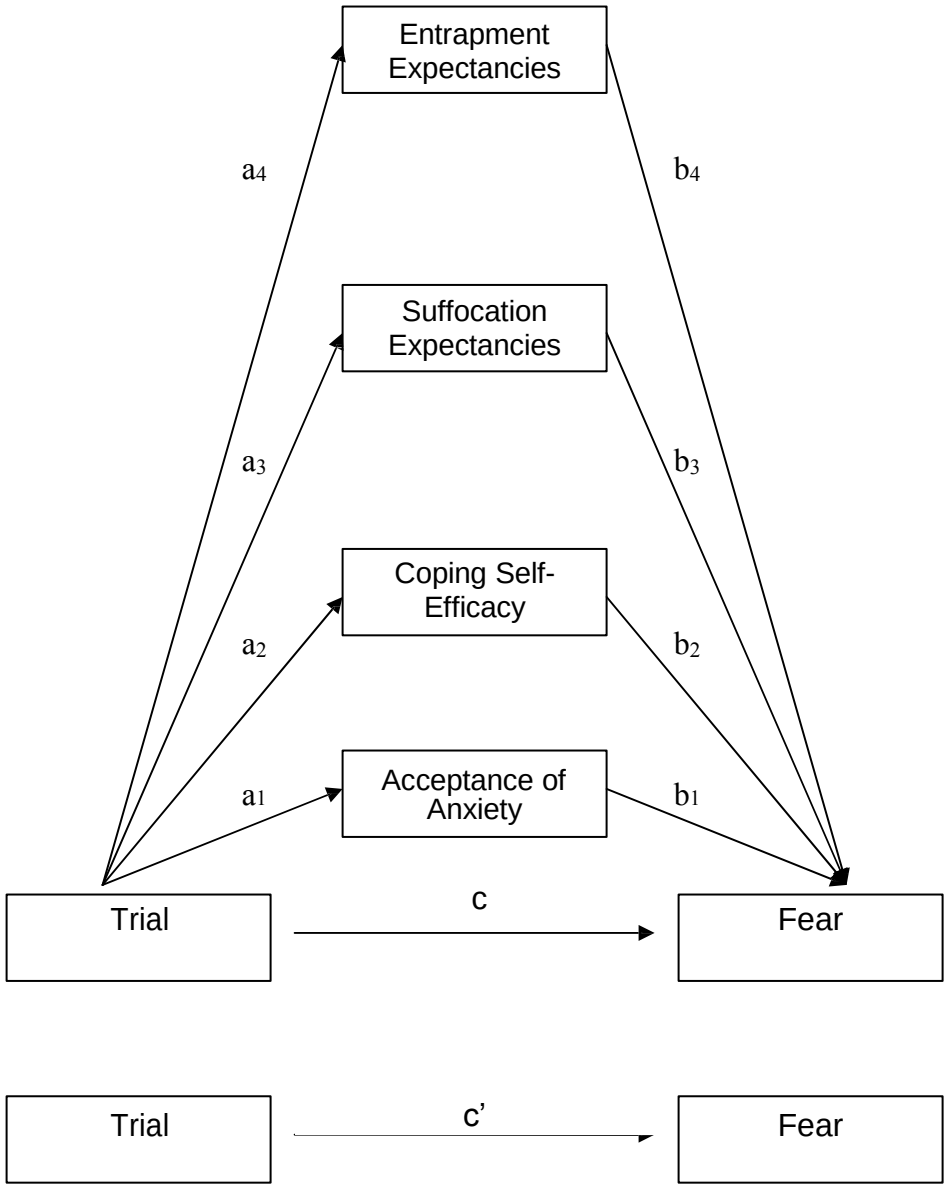


Figure 10. *Integrated model of mediation*

*Models of individual mediational effects.* Entrapment expectancies, $b$ = 0.50, $t(56)$, = 7.82, $p < .001$, suffocation expectancies, $b$ = 0.49, $t(56)$, = 7.06, $p < .001$, self-efficacy, $b$ = -0.44, $t(56)$, = -5.17, $p < .001$, and acceptance of anxiety, $b$ = -3.20, $t(56)$, = -2.93, $p < .01$, were each associated with fear. Including the mediators in the models led to substantial reductions in the slopes from the initial model, which did not include the

mediators. Specifically, when controlling for entrapment expectancies, change in fear per trial was reduced from -9,38 units per trial, $t(56)$, = -17.04, $p < .001$, in Step 1, to -5.28 units per trial, $t(56)$, = -6.38, $p < .001$, in Step 2. Similarly, change in fear was reduced when suffocation expectancies, $b$ = -5.39, $t(56)$ = -7.06, $p < .001$, self-efficacy, $b$ = -7.42, $t(56)$ = -11.07, $p < .001$, or acceptance of anxiety, $b$ = -8.46, $t(56)$ = 12.93, $p < .001$ were controlled for. To assess whether this attenuation in the trial-fear relationship was significant (and thus satisfied our final condition for mediation), we calculated confidence intervals using PRODCLIN. Finally, we computed $P_M$ values for each mediator. These data are presented in Table 4.

Table 4. *Mediating effects of process variables on fear—Separate models*

| Mediator | α | $\sigma_\alpha$ | β | $\sigma_\beta$ | CI | $P_M$ | Sig. Mediation |
|---|---|---|---|---|---|---|---|
| Entrapment Expectancies | | | | | | | |
| Trial | -7.94 | 0.52 | 0.50 | 0.06 | -5.10, -2.89 | .42 | Y |
| Intercept | 67.43 | 3.54 | | | | | |
| Suffocation Expectancies | | | | | | | |
| Trial | -7.82 | 0.61 | 0.49 | 0.07 | -5.08, -2.67 | .41 | Y |
| Intercept | 62.43 | 4.01 | | | | | |
| Self-Efficacy | | | | | | | |
| Trial | 4.68 | 0.57 | -0.44 | 0.08 | -3.00, -1.24 | .22 | Y |
| Intercept | 65.47 | 2.87 | | | | | |
| Acceptance of Anxiety | | | | | | | |
| Trial | 0.27 | 0.03 | -3.20 | 1.09 | -1.51, -0.28 | .09 | Y |
| Intercept | 2.10 | 0.15 | | | | | |

*Note.* $P_M$ = proportion of the relationship mediated. CI = 95% confidence interval of the mediated effect. Alphas are regression coefficients for equations in which the dependent variable is the putative mediator (listed in the column header) and the predictor is TRIAL. Betas are regression coefficients for the mediator term, in which the dependent variable is FEAR and the predictors are 1) TRIAL and 2) the mediator.

Thus, when considered separately, each of the four treatment process variables accounted for significant variance in the relationship between exposure trial and fear. The proportion of variance accounted for ranged from 9%, for acceptance of anxiety, to

42%, for entrapment expectancies. Therefore, all four of these mediator variables were included in the integrated model.

*Integrated model of mediational effects.* When entered simultaneously into the regression model, entrapment expectancies, $b = 0.34$, $t(336), = 6.75$, $p < .001$, suffocation expectancies, $b = 0.11$, $t(336), = 2.24$, $p < .03$, self-efficacy, $b = -0.30$, $t(336), = -5.66$, $p < .001$, and acceptance of anxiety, $b = -2.60$, $t(336), = -3.27$, $p < .01$, were each associated with fear. When controlling for all of these mediators, change in fear per trial was reduced from -9,38 units per trial, $t(56), = -17.04$, $p < .001$, in Step 1, to -3.73 units per trial, $t(336) = -4.92$, $p < .001$, suggesting that the inclusion of the mediators led to an attenuation of the relationship between trial and fear. We then calculated confidence intervals and $P_M$ values for each mediator. These data are presented in Table 5.

Table 5. *Mediating effects of process variables on fear—Combined model*

| Mediator | α | $\sigma_\alpha$ | β | $\sigma_\beta$ | CI | $P_M$ | Sig. Mediation |
|---|---|---|---|---|---|---|---|
| Entrapment Expectancies | | | | | | | |
| Trial | -7.94 | 0.52 | 0.34 | 0.05 | -3.58, -1.88 | .29 | Y |
| Intercept | 67.43 | 3.54 | | | | | |
| Suffocation Expectancies | | | | | | | |
| Trial | -7.82 | 0.61 | 0.11 | 0.05 | -1.60, -0.10 | .09 | Y |
| Intercept | 62.43 | 4.01 | | | | | |
| Self-Efficacy | | | | | | | |
| Trial | 4.68 | 0.57 | -0.30 | 0.05 | -2.03, -0.86 | .15 | Y |
| Intercept | 65.47 | 2.87 | | | | | |
| Acceptance of Anxiety | | | | | | | |
| Trial | 0.27 | 0.03 | -2.60 | 0.79 | -1.18, -0.28 | .08 | Y |
| Intercept | 2.10 | 0.15 | | | | | |

*Note.* $P_M$ = proportion of the relationship mediated. CI = 95 % confidence interval of the mediated effect. Alphas are regression coefficients for equations in which the dependent variable is the putative mediator (listed in the column header) and the predictor is TRIAL. Betas are regression coefficients for the mediator term, in which the dependent variable is FEAR and the predictors are 1) TRIAL and 2) all putative mediators (listed in the column header).

Thus, when considered simultaneously, all four process variables accounted for significant variance in the relationship between exposure trial and fear. The proportion of variance accounted for ranged from 8%, for acceptance of anxiety, to 29%, for entrapment expectancies. Notably, when all four mediators were included, $P_M$ values were substantially reduced for suffocation expectancies (from 41% to 9%) and self-efficacy (from 22% to 15%).

In summary, both of our individual and integrated models supported our hypothesis that fear reduction would be mediated by other process-relevant variables.

### 4.6.4 Step 3: Are These Mediational Pathways Treatment-Specific?

*Process hypothesis 4: Mediational pathways will vary as a function of treatment condition.*

*Hypothesis 4a: Among ACC participants, the relationship between exposure and fear will be most strongly mediated by acceptance of anxiety.*

*Hypothesis 4b: Among SUP participants, the relationship between exposure and fear will be most strongly mediated by self-efficacy.*

*Hypothesis 4c: Among EO participants, the relationship between exposure and fear will be most strongly mediated by threat expectancies.*

In our final analysis, we considered whether the mediational pathways identified in Step 2 operated differently across treatment conditions. Such a case, in which the potency of Level 1 mediational processes (trial→mediator→fear) is dependent upon a Level 2 moderator (treatment condition), has been termed *multilevel moderated mediation* (Hofmann et al., 2007; Muller, Judd & Yzerbyt, 2005;).

To test for multilevel moderated mediation, we utilized the same Level 1 regression equations as we had in our integrated mediation model in Step 2. For each equation, however, we included treatment condition as a Level 2 predictor of each Level 1 coefficient. We then generated the multilevel models using HLM, and tested for mediational effects separately for each of the 3 levels of the treatment condition variable[17], following the same procedure as in Step 2. Results of these analyses are presented in Tables 6 through 8.

Table 6. *Mediating effects of process variables on fear—ACC participants*

| Mediator | α | $\sigma_\alpha$ | β | $\sigma_\beta$ | CI | $P_M$ | Sig. Mediation |
|---|---|---|---|---|---|---|---|
| Entrapment Expectancies | | | | | | | |
| Trial | -8.52 | 1.08 | -0.04 | 0.17 | -2.50, 3.22 | -.04 | N |
| Intercept | 72.62 | 8.48 | | | | | |
| Suffocation Expectancies | | | | | | | |
| Trial | -8.20 | 1.28 | 0.54 | 0.16 | -7.57, -1.76 | .48 | Y |
| Intercept | 63.51 | 9.73 | | | | | |
| Self-Efficacy | | | | | | | |
| Trial | 5.17 | 1.20 | -0.36 | 0.17 | -4.00, -0.16 | .21 | Y |
| Intercept | 60.74 | 6.76 | | | | | |
| Acceptance of Anxiety | | | | | | | |
| Trial | 0.24 | 0.06 | -0.16 | 1.76 | -0.89, 0.81 | .00 | N |
| Intercept | 2.21 | 0.36 | | | | | |

*Note.* $P_M$ = proportion of the relationship mediated. CI = 95 % confidence interval of the mediated effect. Alphas are regression coefficients for equations in which the dependent variable is the putative mediator (listed in the column header) and the predictor is TRIAL. Betas are regression coefficients for the mediator term, in which the dependent variable is FEAR and the predictors are 1) TRIAL and 2) all putative mediators (listed in the column header).

Among ACC participants, when the four potential mediator variables were included, change in fear per trial was reduced from -9.26 units per trial, $t(54)$, = -8.04, $p <$ .001, in Step 1, to -3.24 units per trial, $t(324)$ = -3.41, $p <$ .001, suggesting that the

[17] In testing the significance of mediational relationships, we obtained standard errors of α and β values for ACC and SUP conditions by pooling the standard errors of the reference group term and the appropriate experimental condition term, using the formula $Se_p=\sqrt{[((n_1-1)s_1^2+(n_2-1\_s_2^2))/(n_1+n_2-k)]}$.

inclusion of the mediators led to an attenuation of the relationship between trial and fear. Of the four mediators, suffocation expectancies, $b$ = 0.54, $t$(324), = 3.44, $p$ < .001, and self-efficacy, $b$ = -0.36, $t$(324), = -2.09, $p$ < .04, were each significantly associated with fear, and accounted for 48% and 21% of the variance in the relationship.

Table 7. *Mediating effects of process variables on fear—SUP participants*

| Mediator | α | $\sigma_\alpha$ | β | $\sigma_\beta$ | CI | $P_M$ | Sig. Mediation |
|---|---|---|---|---|---|---|---|
| Entrapment Expectancies | | | | | | | |
| Trial | -8.60 | 1.09 | 0.20 | 0.18 | -4.87, 1.29 | .19 | N |
| Intercept | 68.36 | 8.84 | | | | | |
| Suffocation Expectancies | | | | | | | |
| Trial | -8.34 | 1.29 | 0.15 | 0.17 | -4.16, 1.50 | .14 | N |
| Intercept | 64.84 | 10.15 | | | | | |
| Self-Efficacy | | | | | | | |
| Trial | 3.83 | 1.21 | -0.34 | 0.18 | -3.11, 0.00 | .14 | N |
| Intercept | 73.65 | 7.05 | | | | | |
| Acceptance of Anxiety | | | | | | | |
| Trial | 0.34 | 0.07 | -1.06 | 1.84 | -1.66, 0.86 | .04 | N |
| Intercept | 2.14 | 0.37 | | | | | |

*Note.* $P_M$ = proportion of the relationship mediated. CI = 95 % confidence interval of the mediated effect. Alphas are regression coefficients for equations in which the dependent variable is the putative mediator (listed in the column header) and the predictor is TRIAL. Betas are regression coefficients for the mediator term, in which the dependent variable is FEAR and the predictors are 1) TRIAL and 2) all putative mediators (listed in the column header).

Among SUP participants, when the four potential mediator variables were included, change in fear per trial was reduced from -9.08 units per trial, $t$(54), = -7.78, $p$ < .001, in Step 1, to -4.20 units per trial, $t$(324) = -4.31, $p$ < .001, suggesting that the inclusion of the mediators led to an attenuation of the relationship between trial and fear. However, none of the four mediators were significantly associated with fear, though self-efficacy, $b$ = -0.34, $t$(324), = -1.94, $p$ < .06, approached significance.

Among EO participants, When controlling for all four potential mediator variables, change in fear per trial was reduced from -9.76 units per trial, $t$(54) = -10.38, $p$

< .001, in Step 1, to -5.32 units per trial, $t(54) = -7.00$, $p < .001$. Entrapment expectancies, $b = 0.34$, $t(324)$ were significantly associated with fear, accounting for 24% of the variance in the relationship.

Table 8. *Mediating effects of process variables on fear—EO participants*

| Mediator | α | $\sigma_\alpha$ | β | $\sigma_\beta$ | CI | $P_M$ | Sig. Mediation |
|---|---|---|---|---|---|---|---|
| Entrapment Expectancies | | | | | | | |
| Trial | -6.80 | 0.88 | 0.34 | 0.14 | -4.37, -0.45 | .24 | Y |
| Intercept | 61.47 | 5.99 | | | | | |
| Suffocation Expectancies | | | | | | | |
| Trial | -6.98 | 1.04 | 0.17 | 0.13 | -.3.08, 0.57 | .12 | N |
| Intercept | 59.28 | 6.88 | | | | | |
| Self-Efficacy | | | | | | | |
| Trial | 4.90 | 0.98 | -0.13 | 0.14 | -2.09, 0.68 | .07 | N |
| Intercept | 63.27 | 4.78 | | | | | |
| Acceptance of Anxiety | | | | | | | |
| Trial | 0.25 | 0.05 | -2.48 | 1.57 | -1.49, 0.13 | .06 | N |
| Intercept | 1.97 | 0.25 | | | | | |

*Note.* $P_M$ = proportion of the relationship mediated. CI = 95 % confidence interval of the mediated effect. Alphas are regression coefficients for equations in which the dependent variable is the putative mediator (listed in the column header) and the predictor is TRIAL. Betas are regression coefficients for the mediator term, in which the dependent variable is FEAR and the predictors are 1) TRIAL and 2) all putative mediators (listed in the column header).

In summary, we found that including treatment condition as a Level 2 predictor produced three models with differential mediational effects, thus lending support to our hypothesis of treatment-specific mediation. Among ACC participants, suffocation expectancies and self-efficacy mediated the trial-fear relationship, whereas among EO participants, only entrapment expectancies acted as a significant mediator. And among SUP participants, none of the mediational pathways were significant (though self-efficacy approached significance).

# CHAPTER 5: DISCUSSION

Our primary purpose was to investigate the ways in which emotional-acceptance or -suppression strategies used during exposure treatment for claustrophobia would affect treatment outcome and process. We hypothesized that encouraging claustrophobics to focus on and accept their emotional experience during exposure treatment would facilitate fear reduction, whereas encouraging them to suppress their emotional experience would inhibit fear reduction. Furthermore, we expected these differences to be observable both during the course of treatment itself, and at post-treatment and follow-up observations. Contrary to predictions, no significant differences were found between treatment conditions on composite, individual, or categorical indices of fear, at either post-treatment or one-month follow-up assessments. Thus, we were unable to reject our null hypothesis, that the use of these strategies leads to no appreciable effects on the level of fear reduction produced by exposure therapy. However, in our analyses of treatment process data, we determined that changes in cognitive variables mediated the relationship between exposure and fear reduction, and that these mediational relationships varied across treatment conditions. In particular, emotional suppression led to greater improvements in coping self-efficacy and suffocation expectancies, but these differences did not translate to greater fear reduction.

## 5.1 Outcome Analysis

Although notoriously difficult to do, interpreting a null finding essentially requires one to consider whether that finding is the result of a) a Type II error related to statistical and procedural issues that hindered internal validity, or b) a true null finding.

We will consider both of these possibilities, and in doing so, we will address several strengths and limitations of the current study.

In evaluating the likelihood that our null finding represented a false negative, it bears considering whether lack of statistical power prevented the detection of treatment effects. Our cell sizes (n = 20, 19, and 20) were sufficient to allow detection of a clinically significant finding (change in fear of 15 units) at power = .79. Therefore, it is unlikely that power was a significant issue.

Another potential procedural limitation was that of treatment credibility. At pre-treatment, the suppression condition was viewed as significantly more credible than the other two conditions (means by group: SUP = 85.38; ACC = 74.44; EO = 72.51). To deal with this potential confound, we statistically controlled for pre-treatment CEQ-Credibility scores in all analyses of continuous outcome variables, and we failed to find significant interactions with treatment condition. This suggests that credibility was unlikely to have influenced outcome, consistent with Devilly and Borkovec's (2000) observation that expectancy has more frequently been found to correlate with outcome than has credibility.

An additional procedural issue that bears discussion is that of manipulation strength and viability. This was assessed several ways: by measuring comprehension of instructions immediately prior to treatment, and by measuring emotion regulation strategies repeatedly, using both a single-item unidimensional scale after each treatment trial and a two-item scale at the end of treatment. As intended, the ACC and SUP groups differed significantly on each of these measures, with the EO group consistently

producing intermediate scores. Thus, it appears that the treatment manipulation succeeded in producing divergent treatment groups.

However, upon closer examination of these items (Table 2), it can be seen that the SUP condition tended to produce scores that were closer to the extreme scale values. On comprehension of instructions, a Likert scale ranging from 1= acceptance to 5 = suppression, the ACC mean score of 2.05 was markedly further from the endpoint than was the SUP mean score of 4.63. On emotion regulation strategies, a 0-100 scale, the ACC mean score of 33.08 was markedly further from the endpoint than was the SUP mean score of 87.78. Though it is difficult to draw definitive conclusions regarding these scores, they could be interpreted to mean that SUP participants displayed a better understanding of their instructional set than did the ACC participants, and that they were more willing or better able to employ their assigned emotion regulation strategy. In other words, both manipulations may have worked, but the suppression manipulation may have worked more strongly. If this is the case, why might this be?

One possibility is that our participants were unusually biased toward the use of suppression strategies (which may have contributed to the suppression rationale being seen as more credible). In the absence of normative data regarding dispositional measures of emotional suppression and acceptance, this question cannot be answered directly, though it is possible to consider scores on related measures. Though normative data were unavailable for the ERQ, we examined the AAQ and the WBSI. On the AAQ, which measures experiential avoidance, Hayes et al. (2004) reported nonclinical mean scores ranging from 32.8 ($s$ = 7.9) to 41.6 ($s$ = 7.1). The current sample landed squarely within the nonclinical range, with a mean of 36.68 ($s$ = 6.67) on that measure. On the

WBSI, measuring thought suppression, the current sample's mean score of 51.56, ($s$ = 10.11, $n$ = 59), significantly exceeded the nonclinical means of 44.50 ($s$ = 15.3; $n$ = 159) ) reported by Muris and colleagues (1996), $t(22) = 3.30$, $p < .001$. Although researchers have treated emotional suppression and thought suppression as distinct phenomena, both represent experiential control strategies that have been associated with increased sympathetic arousal (Barnes-Holmes et al., 2004; Wegner & Zanakos, 1994), increased anxiety (Feldner et al., 2003; Becker, Rinck, Roth, & Margraf, 1998), and impairments in functioning (Muris et al., 1996; Gross & John, 1998) and it is plausible that they are significantly correlated. Thus, it may be that our participants showed a predisposition toward suppression strategies.

This possibility was further examined by investigating the manipulation check measures of the EO group. Since these participants did not receive emotion regulation instructions, perhaps their responses indicate some "default" favoritism toward suppression strategies. Yet, the data yielded only mild support for this claim. On the post-treatment emotion regulation measures, EO participants reported slightly greater attempts to control emotions (mean = 6.40) than to accept emotions (mean = 5.30), but they evidenced no such difference on the other two manipulation check measures. Thus, the evidence that the current sample was dispositionally prone to suppression is equivocal, at best.

Next, we considered the possibility that our failure to find differences across treatment conditions resulted from the use of an insufficiently claustrophobic sample. Although 37 of 59 participants met full DSM-IV criteria for claustrophobia, perhaps these participants—high-functioning college students without serious comorbid

psychiatric and medical conditions—represented the less severe end of the clinical spectrum. Because this study was intended as an analogue for the treatment of clinically significant fear and anxiety, this is an important issue to address.

The current sample's CLQ data were compared to the clinical normative data published in the original CLQ validation study (Radomsky et al., 2001) and were found to be comparable. On the suffocation scale, the current sample produced a mean score of 21.17 ($s$ = 10.07), as compared with a mean of 23.8 ($s$ = 8.40) in the published clinical sample. On the restriction scale, the current sample produced a mean of 27.94 ($s$ = 9.43), as compared with 27.6 ($s$ = 9.6) in the published clinical sample. Thus, it appears that the current sample was no more or less claustrophobic than the normative clinical sample.

To further explore the relative severity of the current sample, we compared our outcome measures (BAT fear ratings and CLQ) to those obtained in a previous study by our research group (Powers et al., 2004), which was procedurally similar, utilized similar BAT stimuli, and had comparable sample characteristics and sizes (72 college students across 5 conditions, with cell sizes ranging from 11 to 17). When comparing clinical measures across these studies, we found no significant differences on our pretreatment measures of BAT-2, or the two CLQ subscales. However, for BAT-1 (the stand-up chamber, labeled BAT-2 in that study), the current participants displayed significantly lower levels of fear at pretreatment. These lower fear ratings may have occurred because, in the current study, the BAT 1 chamber was internally lit with Christmas lights (in the interest of employing BATs that differed significantly across sensory dimension; see section 3.3.2.1.1), whereas that chamber was left dark in the Powers et al. (2004) study. Indeed, several of our participants commented that the lights in the stand-up chamber

made it less frightening than the darkened "coffin" chamber (though some participants made comments to the opposite effect). Regardless of their explanation, these lower levels of baseline fear on BAT 1 may have allowed our participants less room for improvement, thereby detracting from our ability to detect time × group interactions.

The previously mentioned limitations notwithstanding, we failed to find evidence supporting the hypothesis that that having claustrophobics actively attempt to suppress their emotional experience during exposure treatment would lead to less improvement. The rationale for this hypothesis was based on prior work suggesting that emotional suppression is cognitively taxing (Richards & Gross, 1999), and evidence indicating that cognitively demanding distractors may impede claustrophobic fear reduction during exposure treatment (Telch et al., 2004; Kamphuis & Telch, 2000). In the absence of evidence favoring this hypothesis, it bears asking: Does emotional suppression serve as a distractor? And is it cognitively demanding?

The present study provides some evidence that emotional suppression serves as a distractor, or rather, that self-distraction is a primary means of emotional suppression. SUP participants reported engaging in higher levels of self-distraction than did participants in the other two groups, $F(2) = 6.92$, $p < .01$ (see Figure 3). Nonetheless, ACC and EO participants also reported considerable levels of self-distraction. As seen on Table 2, ACC and EO participants reported means of 5.30 and 4.70 on the self-distraction measure (as compared to 7.53 for SUP participants). These values roughly correspond to a "moderate effort" on that measure, which asked participants to rate on a 1-9 scale their "conscious effort [made] to distract from what was going on." Though SUP participants may have heavily engaged in self-distraction, ACC and EO may also

have been sufficiently engaged so as to cancel out any differences between treatment groups. That the ACC and EO groups engaged in self-distraction does not represent a failure of the manipulation, since our intent was to influence emotion regulation, and not attentional strategies. Indeed, the inclusion of the attentional measures was exploratory in nature. It is clear, however, that attention and emotion regulation strategies are closely intertwined. Because attentional strategies have been shown to influence the efficacy of exposure (Sloan & Telch, 2002), the clarification of this relationship represents an interesting area of future research.

Regarding the second question—was the emotional suppression strategy used in this study cognitively demanding?—the present study design limits us to speculation. One major limitation was our failure to include any index of attention or cognitive processing, such as a memory task,that would provide an objective measure of distraction. Although Richards and Gross (1999) found evidence that suppression is cognitively taxing, their design differed from ours in several important respects. In that study, participants were asked to memorize information about wounded soldiers while watching slides that produced "transient increases in negative emotion" (p. 132). While doing so, participants were instructed to suppress emotional *expression*, rather than emotional *experience*. It may be that suppressing emotional expression is more cognitively demanding than suppressing emotional experience. Or, emotional suppression attempts may only impede processes involving explicit memory, and not those involving implicit memory, such as emotional processing. Given the previous findings that a cognitively-demanding distractor impeded fear reduction in claustrophobic subjects (Kamphuis & Telch, 2000), it is likely that emotional suppression, as

operationalized in the current study, was simply not sufficiently cognitively demanding to interfere with emotional processing.

Yet another possibility is that acceptance-based treatment augmentations are simply not necessary or appropriate for anxiety disorders in which the source of anxiety is relatively circumscribed, i.e., phobias. Part of the purported value of acceptance, along with its sister construct, mindfulness, is that these processes allow individuals to maintain contact with the present moment (Borkovec, 2002), and thereby engage with anxiety-provoking stimuli which they might otherwise be prone to avoid, consciously or habitually. As Farmer writes, "Exposure therapy requires mindfulness to the extent that mindfulness involves the individual's paying attention to current experiences. Indeed, if clients do not attend to relevant aspects of aversive situations or their physiological arousal, exposure is unlikely to work" (p. 254). In exposure therapy for specific phobia, the client is already in sufficient contact with the aversive stimulus to allow emotional processing to occur, as long as she is not engaged in a cognitively demanding distraction task (Telch et al., 2004). Although the current study was conducted in the context of claustrophobia, an analogous investigation of emotion regulation strategies and exposure therapy could theoretically be carried out across any of the anxiety disorders. It would be interesting to replicate this study in the context of a disorder in which fear or anxiety is more diffuse, and emotional suppression more relevant, such as social phobia or panic disorder.

That emotional acceptance strategies may not offer additional benefit to exposure *per se* does not necessarily diminish the value of mindfulness and acceptance-based treatment packages, such as Acceptance and Commitment Therapy (ACT; Hayes et al.,

1999b) or Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002). Indeed, these treatment packages often make use of components that are procedurally identical to exposure therapy, though they may be contextualized differently. For example, ACT clients may be encouraged to engage in fear-provoking activities in the service of living a vital life in accord with their core values, rather than in the service of bringing about a reduction in the uncomfortable and unwanted experience of fear (Eifert & Forsyth, 2005). Moreover, proponents of those therapies might argue that a limitation of the current study is our attempt to bring about increased emotional acceptance via brief, verbal inductions. Nonetheless, brief acceptance inductions have been found to affect a variety of dependent variables under experimental study (see Barnes-Holmes et al., 2004, for a review), including pain sensitivity (Hayes et al., 1999a), anxious responding (Eifert & Heffner, 2003), and physiological reactivity (Campbell-Sills et al., 2006). Indeed, we based our instructional sets on those used in the Campbell-Sills study. Still, it may be that these brief acceptance inductions are far less powerful than are prolonged packages that conceive of acceptance as an overarching goal, toward which the therapist and client continuously strive.

### 5.2 Treatment Process

Our other central aim was to closely examine fear change over the course of treatment, and to consider its relationship to several cognitive variables: acceptance of anxiety, threat expectancies, and coping self-efficacy. To do so, we measured these variables at each exposure trial during treatment. HLM was used to create individual growth curve models of these variables, and these models were then tested for mediation and moderated mediation.

In the first step of the process analysis, fear and relevant process measures were modeled to test the hypotheses that emotional acceptance would lead to greater indications of improvement within the treatment session. In particular, we expected that 1) the ACC condition would demonstrate greater initial fear activation and decline than the other two groups, while the SUP condition would demonstrate lower initial fear activation and decline, and 2) the ACC condition would display greater improvement in the cognitive variables over the course of treatment, while SUP participants would display reduced improvement on these variables.

Our first hypothesis was not supported; there were no group differences in fear activation or change. No support was found for our second hypothesis, that ACC participants would show greater declines on the process variables. ACC outperformed EO solely on entrapment expectancies, and even then, to a degree that only approached statistical significance. On no measure did ACC outperform SUP participants. These results seem consistent with those of our outcome analysis, especially given the similarity between our process and outcome fear activation measures. Thus, it appears that the use of emotional acceptance during exposure conferred no additional benefit to fear reduction observed over the six treatment trials.

Contrary to our prediction that emotional suppression would retard emotional processing and fear reduction, SUP participants displayed greater increases in self-efficacy, and greater reductions in suffocation expectancies, than were observed in the other two conditions. In light of our earlier findings that failed to support the conclusion that suppression is a cognitively demanding strategy, it makes sense that the SUP group would report greater increases in coping self-efficacy. Because they were explicitly told

that maintaining self-control was important to treatment efficacy, SUP participants may have been more attuned to their ability "to reduce fear to a manageable level while in the chamber" (as the self-efficacy measure states). Sloan and Telch (2002) found that when participants were instructed to focus on the claustrophobic threat (e.g., suffocation) and pay attention to contrary evidence to it, they displayed greater decreases in threat expectancies over the course of treatment. In a similar fashion, SUP participants may have been actively evaluating their coping self-efficacy and finding evidence in its favor.

The decrease in suffocation expectancies is more difficult to explain, but it may also be related to attentional differences. Perhaps attempts to suppress emotions led SUP participants to increased interoceptive awareness, which consequently increased the availability of disconfirmatory information regarding suffocation expectancies.

*Mediators of Fear Reduction During Exposure Treatment*

In the second step of the process analysis, we tested the effects of the putative mediator variables on fear reduction over the course of treatment. It was predicted that all four of the candidate variables would act as mediators, and that acceptance of anxiety would account for the greatest proportion of the relationship. The first prediction was supported; all four variables mediated the relationship. This builds upon our group's prior finding that threat expectancies decline over the course of exposure treatment (Sloan and Telch, 2002), by causally linking these declines to reductions in fear. Moreover, it lends support to the idea that cognitive variables mediate reductions in fear and anxiety in CBT for anxiety disorders (Hofmann, 2004; Hofmann et al., 2007; Smits et al., 2006, Smits, Powers, Cho, & Telch, 2004), an idea that is central to CBT (Beck et al., 1979) and has been called into question by some proponents of acceptance-based

therapies (Hayes et al, 2004; Longmore & Worrell, 2007; see Hofmann, 2007, for a response). Furthermore, it provides evidence for mediation using a methodology that is relatively sophisticated, in its usage of individual growth curve modeling over repeated time points. While some investigators have used multilevel models to identify mediators based on data gathered at pre-treatment, post-treatment, and follow-up (e.g., Hofmann et al., 2007; Jones & Menzies, 2000), Smits et al. (2006) is the only other investigation, to our knowledge, that has used this methodology to investigate changes in mediators within a single treatment session.

*Moderated Mediation of Fear Reduction During Exposure Treatment*

An additional strength of the current study was our simultaneous consideration of several possible mediators. We did not find support, however, for our hypothesis that acceptance of anxiety would be the strongest of these mediators. Instead, the mediators' relative strengths were (in declining order): entrapment expectancies, self-efficacy, suffocation expectancies, and acceptance of anxiety. Given our Step 1 findings that suppression led to greater improvements in some process variables (suffocation expectancies and coping self-efficacy), and our Step 2 findings, that these process variables mediated the relationship between exposure and fear reduction, could we conclude that emotional suppression led to a stronger mediational relationship than did the other treatment conditions?

Step 3 of our analysis suggested that this was not the case. In testing for moderated mediation, we found that among SUP participants, none of the process variables appeared to significantly mediate the relationship. In the ACC group, however, the trial-fear relationship was mediated by suffocation expectancies and self-efficacy, and

among EO participants, the relationship was mediated by entrapment expectancies. These findings failed to support our *a priori* hypothesis, that acceptance would mediate the reduction in fear in the ACC group, coping self-efficacy would mediate the reduction in fear for the SUP group, and threat expectancies would mediate the reduction in fear for the EO group.

In moderated mediation, the effect of the moderator (treatment condition) can influence the mediational relationship in two ways: via the relationship between the initial variable and the mediator (mediational path *a*), and via the relationship between the mediator and the outcome variable (mediational path *b*; Muller, Judd, & Yzerbyt, 2005). In this case, it appears that the use of emotional suppression leads to greater decreases in suffocation expectancies and increases in coping self-efficacy. These differences, however, do not translate to greater declines in fear, as they do for participants in the other two groups. Emotional suppression, while strengthening mediational path *a* (for suffocation expectancies and coping self-efficacy), may also inhibit mediational path *b*, thereby preventing differences in outcome. Such an interpretation is consistent with our finding that emotional suppression was not, in fact, cognitively demanding. Were that the case, we would expect to see SUP participants displaying relatively smaller improvements on threat expectancies, which would translate to smaller reductions in fear.

### 5.3 Further Limitations

In addition to those mentioned throughout the discussion, several other limitations merit consideration. One significant limitation regarding our process analysis was that we did not fully account for potentially reciprocal relationships between fear and

other process variables. That is to say, our mediational models were specified such that mediation was only analyzed within each trial. It is possible, however, that changes in the outcome and mediator variables at each trial affected these variables at the following time point. These cross-trial relationships could be brought under consideration via the employment of a longitudinal mediational model (MacKinnon, Fairchild & Fritz, 2007), such as a cross-lagged panel design (Smits et al., 2006). These newer methods of analysis hold promise for better understanding cognitive mediators of exposure treatments.

Another limitation regarding the process analysis was our somewhat unsophisticated single-item measure of acceptance. Because this does not represent a well-validated measure, it casts some doubt on our findings, particularly the finding that acceptance of anxiety did not mediate fear reduction in the ACC group. Emotional acceptance is a difficult concept to measure via self-report, even when using instruments with much larger numbers of items (AAQ-16; Bond & Bunce, 2003). Moreover, most instruments intended to tap acceptance and the related construct, mindfulness (e.g., Kentucky Inventory of Mindfulness Skills; Baer, Smith, & Allen, 2004), seek to measure these constructs as traits, rather than states. Laboratory investigations of acceptance-based treatments could well be aided by the development and validation of brief, state-dependent measures of these constructs.

Finally, there were limitations regarding our sample. Despite our efforts to recruit participants from the community at large, 53 of our 59 participants were university students, and the mean age of the sample was 21.27. Also, our participants were overwhelmingly female (77.97%). Although women are overrepresented as specific

phobia sufferers (point prevalence of 19.9% for women and 12.4% for men; Fredrikson, Annas, Fischer & Wik, 2004), they seem to be overrepresented in this sample. Both of these factors may negatively impact the generalizability of our findings.

# APPENDIX A: MANUALIZED PROTOCOL

# Claustrophobia Experiment
# Session 1
# Instructions

## SUPPLIES

1. Clipboard
2. HR Monitor
3. Tape Recorder and Tape
4. Forms
    a. 2 copies of consent form
    b. Instructions packet
    c. Screening packet 1
    d. Screening packet 2
    e. Questionnaire packet
    f. Pretreatment BAT packet
    g. Treatment Data Collection packet
    h. Posttreatment BAT packet

## GENERAL GUIDELINES

1. Follow the procedure on the script as closely as possible. However, unless indicated, it is not necessary to read the instructions exactly word for word. Try to keep the tone friendly and conversational.
2. Do NOT write the participant's name on any data collection sheets.
3. Keep the participant out of the Claustrophobia Room except when they are doing the exposures.

## PROCEDURE

### 1. GREETING, OVERVIEW OF SESSION, and CONSENT

***Hi! My name is _____ I am the experimenter for the Claustrophobia Study and I will be guiding you through today's claustrophobia treatment session. This session should take about 2 hours to complete. We will also ask you to return for a follow-up session in one month's time. That session should take about 30-60 minutes to complete.***

***Before we continue, I'll ask you to please turn your cell phone off during the experimental session. Thanks.***

***Today's session includes several phases. First, I will have you read a consent form and sign it when finished. Then I will conduct a brief interview with you, and I'll also ask you to fill out some questionnaires. Next, you will put on a heart rate monitor and enter two different small enclosed spaces, and fill out some more questionnaires. This will allow us to measure how claustrophobic you are.***

***Next, we will ask you to undergo a brief behavioral treatment for claustrophobia. This treatment has been found to be highly effective in previous studies conducted here in our laboratory. After the treatment, we will again ask you to enter two small enclosed spaces, so that we can again determine your degree of claustrophobia. Do you have any questions?***

Answer any questions as briefly as you can. Hand them a clipboard with the consent form.

***Here is a form we need you to read and sign before we get started. It describes what you will be asked to do as a participant in this study. Let me know if you have any questions.***

After they sign the consent form, give them one copy to keep.

Next, record the participant's name in the **Participant Log** and note which group they are assigned to (EXP, ACC, or CON).

## 2. DEMOGRAPHICS AND SCREENING QUESTIONAIRES

**READ WORD FOR WORD:**

[Confidentiality notice:] ***The information you will provide in the interview, and your answers on the questionnaires, are confidential. Only the graduate student who is the principal investigator for this experiment will have access to the information, and the data is analyzed anonymously. This means that we do not look at a particular individual's answers--they are coded by number. Any questions?***

Have them fill out Screening Packet 1, and check their answers on items 13 and 14 to ensure that they meet entry criteria. If they do not answer affirmatively to either of these items, ask them about it, and see whether they need to change their answers.

Next, ask them the questions on Screening Packet 2 (SCID for claustrophobia).

At this point, asses for eligibility. If they appear not to be eligible, review their materials and try to ensure that this is really the case. Why did they show up for the experiment if they are not claustrophobic? If they truly are not eligible, then dismiss them from the study. (301 students who are ineligible will receive 1 HOUR credit for the session.)

## 3. OTHER QUESTIONNAIRES

Have them fill out the questionnaire packet.

***Next, I will ask you to fill out some additional questionnaires about topics that are not necessarily related to enclosed spaces. Be thorough and honest, but please don't spend too much time thinking about the questions. Stick with your first reaction and mark that answer. Again, the information we collect here will be kept confidential. If you have any questions about any of the questionnaires, do not hesitate to ask me.***

## 4. HEART RATE MONITOR

Explain to them how to use the HR monitor. Have them go into the bathroom to moisten the electrodes and put it on.

Once they are wearing the monitor tell them to sit still for 3 minutes, so that you can get a "before" HR.

**----------MONITOR: "START LAP 1"**

Wait 3 minutes.
**----------MONITOR: "START LAP 2"**

## 5. INITIAL ASSESSMENTS

At this point, you and the participant should be outside the claustrophobia chamber room. In the room, the lights should be off, except for the night light and the lights inside the cabinet.

***Now we're going to assess your degree of claustrophobia. In this room there are two small chambers, and I will ask you to enter each of them for a short period of time. First I am going to show you the upright chamber.***

### A) Cabinet Exposures

Enter the room and show them the chamber for about five seconds, then step back outside the room. Have them fill out the Pretreatment BAT packet up until it says to STOP (2 pages).

Say:
***Now, we are going to go into the room, and I will ask you to enter the upright chamber. When you enter the chamber, I will lock the door. However, it is important that you understand that you can leave the cabinet at any time if you get too uncomfortable. If you knock on the inside of the cabinet, I will immediately undo the lock and open the door. Otherwise, I will signal to you that the trial is over by opening the door. Do you have any questions?*** [answer them as briefly as you can].

Escort the participant into the chamber. After you close the doors,

1. Place the lock on the door, and click it **shut without actually locking the door.**
2. Start timing with your stopwatch. Allow a **maximum of one minute** in the chamber.

**----------MONITOR: "START LAP 3"**

3. Remain close to the chamber, so that the HR monitor continues to transmit to the stopwatch.

At one minute, open the door, and push Start on the stopwatch.
**----------MONITOR: "START LAP 4"**

At the conclusion of the trial (one minute, or less if the participant knocks on the cabinet), escort the participant outside the room.

***I would like you to answer some questions now related to your experience in the cabinet.***

Have them fill out the response questionnaire.

**REPEAT THIS PROCEDURE (EXCEPT FOR SHOWING THEM THE CABINET) FOR THE SECOND BAT**

***Now I will show you the other chamber.***

**B) Chamber Exposures**

Enter the room and show them the chamber for about five seconds, then step back outside the room. Have them fill out the Pretreatment BAT packet up until it says to STOP (2 pages).

Say:
***Now, we are going to go into the room, and I will ask you to enter the other chamber. When you enter the chamber, I will lock the door. However, it is important that you understand that you can leave the chamber at any time if you get too uncomfortable. If you knock on the inside of the chamber, I will immediately undo the lock and open the door. Otherwise, I will signal to you that the trial is over by opening the door. Do you have any questions?*** [answer them as briefly as you can].

Escort the participant into the chamber. After you close the doors,

1. Place the lock on the door, and click it shut **without actually locking the door.**
2. Start timing with your stopwatch. Allow a **maximum** of **one minute** in the chamber.

----------**MONITOR: "START LAP 7"**

3. Remain close to the chamber, so that the HR monitor continues to transmit to the stopwatch.

At one minute, open the door, and push Start on the stopwatch.
----------**MONITOR: "START LAP 8"**

At the conclusion of the trial (one minute, or less if the participant knocks on the cabinet), escort the participant outside the room.

***I would like you to answer some questions now related to your experience in the chamber.***

Have them fill out the response questionnaire, and push Start on the stopwatch.
----------**MONITOR: "START LAP 10"**

**REPEAT THIS PROCEDURE (EXCEPT FOR SHOWING THEM THE CHAMBER) FOR THE SECOND BAT**

## 6. TREATMENT INTERVENTION

Bring the participant into any room except the Claustrophobia Room.

***In a few minutes we will begin the treatment portion of today's session. I would like you to listen to a taped recording that will explain how our claustrophobia treatment works. It is very important that you pay close attention to this tape if you want to benefit from the treatment. If you have any questions about anything, feel free to ask me after the tape ends.***

Leave the room while the participant listens to the tape. Note whether they are listening to the X min tape (Exposure only group) or the X min tape (the CON and ACC groups).

After the tape say: ***Do you have any questions?*** Answer questions as briefly as you can.

***Before we begin, I would like you to fill out one more questionnaire.***

Give them the Therapy Evaluation Form (at the beginning of the Treatment Measures packet).

Next, bring the subject back to the door of the Claustrophobia Room. Have them fill out the CCQ and the Chamber Prediction Survey. Say: ***Please complete the questionnaires up until the STOP instructions.***

**----------MONITOR: "START LAP 11"**

***Now we will enter the room, and I am going to open the door of the chamber. You are to get inside and lie down on the sanitary paper with your head on the pillow, and remain there as long as you can. I will signal to you when the trial is over by opening the door. I would like you to try and stay for at least five minutes . In the event that you need to leave the chamber before the five minutes are over, simply knock on the door of the chamber and I will let you out.***

For **ACC** participants: ***While you are in the chamber, remember that you should try and allow yourself to experience fear and anxiety without trying to avoid or suppress those feelings. This is crucial to the success of this exercise. THE EXERCISE WILL BE FAR MORE EFFECTIVE IF YOU MAKE A CONSCIOUS EFFORT NOT TO CONTROL YOUR FEELINGS OF FEAR, AND TO ALLOW YOURSELF TO EXPERIENCE HEIGHTENED ANXIETY. Do you have any questions?***

For **CON** participants: ***While you are in the chamber, remember that you should do your best to keep yourself from feeling fear or anxiety. THE EXERCISE WILL BE FAR MORE EFFECTIVE IF YOU MAKE A CONSCIOUS EFFORT TO CONTROL YOUR FEELINGS OF FEAR, AND TO PREVENT YOURSELF FROM***

***EXPERIENCING HEIGHTENED ANXIETY. This is crucial to the success of this exercise. Do you have any questions?***

**----------MONITOR: "START LAP 12"**

Have them enter, and then close the door to the chamber all the way, Allow a maximum of **five** minutes in the chamber.

After either the five minutes have ended or the participant has opened the door, end the trial.

**----------MONITOR: "START LAP 13"**

Bring the participant outside the room and

1) Enter the amount of time they spent in the chamber IN SECONDS.

2) Have them fill out the reaction survey. Say: ***I would like you to complete the following questionnaires now. If you have any questions or problems please ask.***

Each of the following trials should be conducted in exactly the same way. It is acceptable not to repeat the general exposure instructions word for word, as participants become familiar with the procedure. However, be sure to repeat the condition-specific instructions thoroughly each time.

## 7. POST ASSESSMENTS

**----------MONITOR: "START LAPS 23-30" (lap numbers will be different if additional treatment trials were required)**

See Pre-Treatment Assessment instructions. The Post-Treatment Assessment should be procedurally identical.

ALSO, fill out the CGI scale at the end of the Post-Treatment Assessment packet.

## 8. GET RESTING HR

**----------MONITOR: "START LAP 31"**

Have the participant sit down in a chair. Start a lap on the stopwatch and measure their HR for 3 minutes. This will be used as resting HR.

## 9. SCHEDULE NEXT SESSION

.

## 10. DATA ENTRY

**1. Upload HR data into Polar program**
**2. Enter all data into SPSS spreadsheet**

# REMEMBER TO TAKE BACK THE HEART RATE MONITOR!!!

**Please refer to Jon Horowitz for any questions about the study.**
**horowitz@mail.utexas.edu**
**cell: 914-2754**

HR Data Profile

| Lap Number | Activity | Approximate Length |
|---|---|---|
| | Pretreatment BAT's | |
| 1. | Baseline (Pre) HR | 3:00 |
| 2. | Instructions, anticipation BAT 1 | 3:00 |
| 3. | BAT 1 (cabinet) | 1:00 or less |
| 4. | Anticipation BAT 2 | 1:00 |
| 5. | BAT 2 (cabinet) | 1:00 or less |
| 6. | Instructions, anticipation BAT 3 | 3:00 |
| 7. | BAT 3 (chamber) | 1:00 or less |
| 8. | Anticipation BAT 4 | 1:00 |
| 9. | BAT 4 (chamber) | 1:00 or less |
| | Treatment | |
| 10. | Treatment intervention (listen to tape) | 15:00 |
| 11. | Anticipation Trial 1 | 3:00 |
| 12. | Trial 1 | 6:00 or less |
| 13. | Anticipation Trial 2 | 2:00 |
| 14. | Trial 2 | 6:00 or less |
| 15. | Anticipation Trial 3 | 2:00 |
| 16. | Trial 3 | 6:00 or less |
| 17. | Anticipation Trial 4 | 2:00 |
| 18. | Trial 4 | 6:00 or less |
| 19. | Anticipation Trial 5 | 2:00 |
| 20. | Trial 5 | 6:00 or less |
| 21. | Anticipation Trial 6 | 2:00 |
| 22. | Trial 6 | 6:00 or less |
| (after this point, lap numbers may be different if additional trials are required) | | |
| | Posttreatment BAT's | |
| 23. | Instructions, anticipation BAT 1 | 3:00 |
| 24. | BAT 1 (cabinet) | 1:00 or less |
| 25. | Anticipation BAT 2 | 1:00 |
| 26. | BAT 2 (cabinet) | 1:00 or less |
| 27. | Instructions, anticipation BAT 3 | 3:00 |
| 28. | BAT 3 (chamber) | 1:00 or less |
| 29. | Anticipation BAT 4 | 1:00 |
| 30. | BAT 4 (chamber) | 1:00 or less |
| 31. | Baseline (post) HR | 3:00 |

# APPENDIX B: COLLECTED MEASURES

**Participant**

**Experimenter**: **Date**: **Time**:

---

# SCREENING PACKET 1
# (filled out by participant)

**Date of Birth**

**Marital Status:** *Single/Never married* *Married* *Widowed* *Divorced*

**Gender:** *Male* *Female*

**Age:**

**Highest grade level completed:**

1 2 3 4 5 6 7 8 9 10 11 12 Some College 2-Year College 4-year College Post-graduate Degree

**Racial Categories (Check all that Apply):**

- American Indian/Alaska Native
- Asian
- Native Hawaiian or Other Pacific Islander
- Black or African American
- White
- Unknown

**Ethnic Categories**

- Hispanic or Latino
- Not Hispanic or Latino

(Race and ethnicity information is collected in compliance with National Institutes of Health Policy on Reporting Race and Ethnicity Data)

**SCREENING QUESTIONNAIRE I**

INSTRUCTIONS: We'd like to get some information from you about your anxiety. The content of your answers will be kept STRICTLY CONFIDENTIAL. Thank you for your cooperation and your candid response to these questions. Record next to each item how ANXIOUS you would feel in the following places or situations. For example, if you have no fear at all of "Lying on a bottom bunkbed," record "0" next to that item. If you are extremely afraid of this situations, place "4" next to the item. REMEMBER TO RECORD A NUMBER (and only 1 number) NEXT TO EACH ITEM. THANK YOU FOR YOUR TIME AND EFFORT!

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| No fear | Mild Fear | Moderate Fear | Severe Fear | Extreme fear |

1) _ _Locked in a small dark room without windows for 15 min
2) _ _Head first into zipped up sleeping bag, able to leave whenever you wish
3) _ _Locked in a small well-lit room without windows for 15 min
4) _ _In a crowded train, which stops between stations
5) _ _In a public washroom and the lock jams
6) _ _In an elevator at a time when there is a strong likelihood of a power cut
7) _ _Working under a sink for 15 minutes
8) _ _Standing in an elevator on the ground floor with the doors closed
9) _ _Lying on a bottom bunk bed
10) _ _In the center of a full room row at a cinema
11) _ _In back of a small 2-door car with a person on either side of you, and all the windows are fogged up
12) _ _Waiting for 15 min in an airplane on the ground with the door closed

13. Do you have a fear of enclosed spaces (such as elevators, caves, etc)? No Yes

14. Do you avoid closed spaces, or endure them only with intense anxiety? No Yes

15a. Have you ever undergone an MRI scan? No Yes

IF YES:
b. How many times have you undergone an MRI scan? _

c. What was the date of your most recent MRI scan? (MM/YYYY)_ _

d. Did the MRI procedure cause claustrophobic fear that was difficult to endure?
No Yes

e. Were you able to complete the MRI procedure? No Yes

f. Was medication used to control your anxiety during the scan? No Yes

g. IF YES: Medication_ __ h. Dose _

16a. Are you currently planning to undergo an MRI scan? No Yes

b. IF YES: Scheduled date of scan_

17. If you had to undergo an MRI scan at this time, how much fear do you think you would feel?

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| No fear | Mild Fear | Moderate Fear | Severe Fear | Extreme fear |

18. How confident are you that you could undergo an MRI scan without medication?

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| Not Confident at All | | | | | | | | | | Extremely Confident |

**SCREENING QUESTIONNAIRE II**

1. (If female) Are you currently pregnant?

□No □Yes

2a. Do you currently have any life-threatening medical conditions (such as seizure disorder, respiratory disorder, cardiovascular disease)?

□No □Yes

(b) IF YES, please list here:

3a. Are you currently taking any prescription or over-the-counter medications?

□No □Yes: (b)

4a. IN THE PAST 24 HOURS, have you taken any anti-anxiety medication (such as Xanax, Valium, Ativan, Klonapin)?

□No □Yes: (b) Medication (c) Dose

.

5a. Have you ever received a diagnosis of schizophrenia, paranoid or other psychotic disorder, organic mental disorder, or bipolar disorder?

□No □Yes: (b) Diagnosis

YOU HAVE COMPLETED THIS PACKET. PLEASE INFORM THE EXPERIMENTER THAT YOU ARE READY TO CONTINUE.

# SCREENING PACKET 2
# (filled out by experimenter)

**Participant**_

**Experimenter**:__ **Date**:_ **Time**:__

**Inclusion/Exclusion Criteria**

| | | |
|---|---|---|
| 1. Between 18-65: | **YES** | NO |
| 2. Currently pregnant | YES | **NO** |
| 3. Life-threatening medical condition | YES | **NO** |
| 4. Serious psychiatric diagnosis | YES | **NO** |

**Met inclusion criteria? (All boldfaced must be circled for person to participate)**

YES NO (excluded)

| | | |
|---|---|---|
| **SCID Claus. Diagnosis (except criterion E)** | YES | NO |

# Pretreatment Assessment BAT Packet

**Date**_

**Participant number**_

**Experimenter Initials**_

## BAT 1: UPRIGHT CHAMBER

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

# Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

## Please STOP and await instructions from the experimenter.

# Reaction Survey

1. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced **IMMEDIATELY BEFORE** exiting the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

---

**For experimenter:**

**Time** _

## BAT 2: UPRIGHT CHAMBER

# Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Reaction Survey

1. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced **IMMEDIATELY BEFORE** exiting the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

**Please STOP and await instructions from the experimenter.**

**For experimenter:**

**Time** _

# BAT 3: COFFIN

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

# Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Reaction Survey

1. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced **IMMEDIATELY BEFORE** exiting the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

---

**For experimenter:**

**Time** _

## BAT 4: COFFIN

# Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Reaction Survey

1. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced **IMMEDIATELY BEFORE** exiting the chamber?

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

**Please STOP and await instructions from the experimenter.**

**For experimenter:**

**Time** _

**Clinical Global Impression Scale for Claustrophobia (CGIS-C)**

This is to be filled out by the experimenter at the end of the session

Global Claustrophobia Symptoms
Considering your total clinical experience with this population,
how severe are the patient's symptoms of claustrophobia at this time?

1. normal (not at all ill)
2. borderline menatally ill
3. mildly ill
4. moderately ill
5. markedly ill
6. severely ill
7. extremely ill

**Date**

**Participant Number**

**Experimenter Initials**

## Pretreatment Questionnaire Packet

**Thank you for choosing to take part in our study. We greatly appreciate your truthfulness in responding to these questionnaires. The information you provide will help us understand the fear of enclosed spaces (claustrophobia).**

**Please answer these questionnaires truthfully and thoroughly. Do not spend too much time deciding about which answers are most accurate. If you are unsure, just go with your first instinct.**

**All the information you provide will be kept confidential. Only the experimenter will have access to it. If you have any questions, do not hesitate to ask the experimenter.**

# Acceptance and Action Questionnaire (AAQ 19)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| never true | very seldom true | seldom true | sometimes true | frequently true | almost always true | always true |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1. | I am able to take action on a problem even if I am uncertain what is the right thing to do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | When I feel depressed or anxious, I am unable to take care of my responsibilities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I try to suppress thoughts and feelings that I don't like by just not thinking about them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | It's okay to feel depressed or anxious. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I rarely worry about getting my anxieties, worries, and feelings under control. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | In order for me to do something important, I have to have all my doubts worked out. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I'm not afraid of my feelings. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | I try hard to avoid feeling depressed or anxious. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | Anxiety is bad. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | Despite doubts, I feel as though I can set a course in my life and then stick to it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | If I could magically remove all the painful experiences I've had in my life, I would do so. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | I am in control of my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | If I get bored with a task, I can still complete it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. | Worries can get in the way of my success. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | I should act according to my feelings at the time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | If I promised to do something, I'll do it, even if I later don't feel like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | I often catch myself daydreaming about things I've done and what I would do differently next time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. | When I evaluate something negatively, I usually recognize that this is just a reaction, not an objective fact. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. | When I compare myself to other people, it seems that most of them are handling their lives better than I do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

# White Bear Supression Inventory (WBSI)

Please indicate the degree to which you agree with each of the following items using the scale below. Simply circle your response to each item.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| strongly disagree | disagree somewhat | neither agree nor disagree | agree somewhat | strongly agree |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | There are things I prefer not to think about. | 1 | 2 | 3 | 4 | 5 |
| 2. | Sometimes I wonder why I have the thoughts I do. | 1 | 2 | 3 | 4 | 5 |
| 3. | I have thoughts that I cannot stop. | 1 | 2 | 3 | 4 | 5 |
| 4. | There are images that come to mind that I cannot erase. | 1 | 2 | 3 | 4 | 5 |
| 5. | My thoughts frequently return to one idea. | 1 | 2 | 3 | 4 | 5 |
| 6. | I wish I could stop thinking of certain things. | 1 | 2 | 3 | 4 | 5 |
| 7. | Sometimes my mind races so fast I wish I could stop it. | 1 | 2 | 3 | 4 | 5 |
| 8. | I always try to put problems out of mind. | 1 | 2 | 3 | 4 | 5 |
| 9. | There are thoughts that keep jumping into my head. | 1 | 2 | 3 | 4 | 5 |
| 10. | Sometimes I stay busy just to keep thoughts from intruding on my mind. | 1 | 2 | 3 | 4 | 5 |
| 11. | There are things that I try not to think about. | 1 | 2 | 3 | 4 | 5 |
| 12. | Sometimes I really wish I could stop thinking. | 1 | 2 | 3 | 4 | 5 |
| 13. | I often do things to distract myself from my thoughts. | 1 | 2 | 3 | 4 | 5 |
| 14. | I often have thoughts that I try to avoid. | 1 | 2 | 3 | 4 | 5 |
| 15. | There are many thoughts that I have that I don't tell anyone. | 1 | 2 | 3 | 4 | 5 |

## Claustrophobia Questionnaire

How anxious would you feel in these places or situations? Circle the most appropriate response.

**1. Swimming while wearing a nose plug**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**2. Working under a sink for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**3. Standing in an elevator on the ground floor with the doors closed**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**4. Trying to catch your breath during vigorous exercise**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**5. Having a bad cold and finding it difficult to breathe through your nose**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**6. Snorkeling in a safe practice tank for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**7. Using an oxygen mask**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**8. Lying on a bottom bunk bed**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**9. Standing in the middle of the third row at a packed concert realizing that you will be unable to leave until the end**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**10. In the center of a full row at a cinema**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**11. Working under a car for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**12. At the furthest point from an exit on a tour of an underground mine shaft**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**13. Lying in a sauna for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**14. Waiting for 15 min in a plane on the ground with the door closed**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

(RS)

**15. Locked in a small DARK room without windows for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**16. Locked in a small WELL-LIT room without windows for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**17. Handcuffed for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**18. Tied up with hands behind your back for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**19. Caught in tight clothing and unable to remove it**

| | | | | |
|---|---|---|---|---|
| Not at all | Slightly | Moderately | Very | Extremely |

| | | | | |
|---|---|---|---|---|
| Anxious | Anxious | Anxious | Anxious | Anxious |

**20. Standing for 15 min in a straitjacket**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**21. Lying in a tight sleeping bag enclosing legs and arms, tied at the neck, unable to get out for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**22. Head first into a zipped up sleeping bag, able to leave whenever you wish**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**23. Lying in the trunk of a car with air flowing through freely for 15 min**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**24. Having your legs tied to an immovable chair**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**25. In a public washroom and the lock jams**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**26. In a crowded train which stops between stations**

| | | | | |
|---|---|---|---|---|
| Not at all Anxious | Slightly Anxious | Moderately Anxious | Very Anxious | Extremely Anxious |

**Emotion Regulation Questionnaire (ERQ)**

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1----------2----------3----------4----------5----------6----------7
strongly disagree — neutral — strongly agree

1. _ When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about.*
2. _ I keep my emotions to myself.
3. _ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about.*
4. _ When I am feeling *positive* emotions, I am careful not to express them.
5. _ When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
6. _ I control my emotions by *not expressing them.*
7. _ When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.
8. _ I control my emotions by *changing the way I think* about the situation I'm in.
9. _ When I am feeling *negative* emotions, I make sure not to express them.
10. _ When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situations.

**TIPI**

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

1 = Disagree strongly
2 = Disagree moderately
3 = Disagree a little
4 = Neither agree nor disagree
5 = Agree a little
6 = Agree moderately
7 = Agree strongly

I see myself as:

1. _ Extraverted, enthusiastic.
2. _ Critical, quarrelsome.
3. _ Dependable, self-disciplined.
4. _ Anxious, easily upset.
5. _ Open to new experiences, complex.
6. _ Reserved, quiet.
7. _ Sympathetic, warm.
8. _ Disorganized, careless.
9. _ Calm, emotionally stable.
10. _ Conventional, uncreative.

**CQ**

1.How confident are you that you can perform courageous behaviors, when necessary?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

2. How likely is it that you will be able to act courageously, when necessary?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

3. How confident are you that you will be able to face your fears, when necessary?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

4. How confident are you that you will be able to confront new fearful situations that pose no real threat?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

5. How important is it to you that you act courageously, when the situation calls for it?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

6. How bothered are you by situations where the outcome is uncertain?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

7. How threatened do you feel by the feelings and sensations of anxiety? (e.g., heart racing, muscle tension, increased breathing)

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

8. How relaxed do you feel right now?

0 10 20 30 40 50 60 70 80 90 100
Not at all A little Moderately Very much Extremely

**DTS**

Directions: Think of times that you feel distressed or upset. Select the response for each item that best describes your beliefs about feeling distressed or upset.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly agree | Mildly agree | Agree and disagree equally | Mildly disagree | Strongly disagree |

| | |
|---|---|
| 1. Feeling distressed or upset is unbearable to me. | 1 2 3 4 5 |
| 2. When I feel distressed or upset, all I can think about is how bad I feel. | 1 2 3 4 5 |
| 3. I can't handle feeling distressed or upset. | 1 2 3 4 5 |
| 4. My feelings of distress are so intense that they completely take over. | 1 2 3 4 5 |
| 5. There's nothing worse than feeling distressed or upset. | 1 2 3 4 5 |
| 6. I can tolerate being distressed or upset as well as most people. | 1 2 3 4 5 |
| 7. My feelings of distress or being upset are not acceptable. | 1 2 3 4 5 |
| 8. I'll do anything to avoid feeling distressed or upset. | 1 2 3 4 5 |
| 9. Other people seem to be able to tolerate feeling distressed or upset better than I can. | 1 2 3 4 5 |
| 10. Being distressed or upset is always a major ordeal for me. | 1 2 3 4 5 |
| 11. I am ashamed of myself when I feel distressed or upset. | 1 2 3 4 5 |
| 12. My feelings of distress or being upset scare me. | 1 2 3 4 5 |
| 13. I'll do anything to stop feeling distressed or upset. | 1 2 3 4 5 |
| 14. When I feel distressed or upset, I must do something about it immediately. | 1 2 3 4 5 |
| 15. When I feel distressed or upset, I cannot help but concentrate on how bad the distress actually feels. | 1 2 3 4 5 |

# Treatment Data Collection Packet

**Date**

**Participant number**

**Experimenter Initials**

## Exposure Sessions

**(This form is intended to help keep track of time remaining during the exposure session. Except for posttreatment HR, it is not entered into the data set.)**

| Trial | Exp. Time | Tot. Time Elapsed |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| (7) | | |
| (8) | | |
| (9) | | |
| (10) | | |
| (11) | | |
| (12) | | |
| (13) | | |
| (14) | | |

**Post-treatment resting HR (take after all exposures done)**

**Therapy evaluation form**

We would like you to indicate below how much you believe, *right now*, that the therapy you are receiving will help to reduce your anxiety. Belief usually has two aspects to it: (1) what one *thinks* will happen and (2) what one *feels* will happen. Sometimes these are similar; sometimes they are different. Please answer the questions below. In the first set, answer in terms of what you *think*. In the second set, answer in terms of what you really and truly *feel*. We do not want the experimenter to ever see these ratings, so please keep the sheet covered and turn the page when you are done.

**Set I**

1. At this point, how logical does the therapy offered to you seem?

1 2 3 4 5 6 7 8 9
not at all logical somewhat logical very logical

2. At this point, how successfully do you think this treatment will be in reducing your phobia symptoms?

1 2 3 4 5 6 7 8 9
not at all useful somewhat useful very useful

3. How confident would you be in recommending this treatment to a friend who experiences similar problems?

1 2 3 4 5 6 7 8 9
not at all confident somewhat confident very confident

4. By the end of the therapy period, how much improvement in your phobia symptoms do you think will occur?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

**Set II**

For this set, close your eyes for a few moments, and try to identify what you really *feel* about the therapy and its likely success. Then answer the following questions.

1. At this point, how much do you really *feel* that therapy will help you to reduce your phobia symptoms?

1 2 3 4 5 6 7 8 9
not at all somewhat Very much

2. By the end of the therapy period, how much improvement in your phobia symptoms do you really *feel* will occur?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

**Set III**

*Based on the instructions you received*, please answer the following questions.

1. During the procedure, I should try to control my emotions as much as possible

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Disagree | | Neither Agree nor Disagree | | Agree |

2. The procedure will work better if I allow myself to feel whatever feelings I have

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Disagree | | Neither Agree nor Disagree | | Agree |

## Please STOP and await instructions from the experimenter.

## (Before trial 1)
## Claustrophobic Concerns Questionnaire (CCQ)

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**7. My anxiety does not bother me**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

**8. It is bad to feel anxious**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

# Pretreatment Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Trial 1. Chamber Reaction Survey

1. What was the level of fear you experienced upon **ENTERING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced upon **EXITING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

3. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

4. While I was in the chamber, I made a **CONSCIOUS EFFORT** to…

0 10 20 30 40 50 60 70 80 90 100
Allow my emotions to run their course (Neither) Stay in control of my emotions

## Please STOP and await instructions from the experimenter.

---

**For experimenter:**

Time_

## (Before trial 2)
## Claustrophobic Concerns Questionnaire (CCQ)

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**7. My anxiety does not bother me**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

**8. It is bad to feel anxious**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

# Pretreatment Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Trial 2. Chamber Reaction Survey

1. What was the level of fear you experienced upon **ENTERING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced upon **EXITING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

3. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

4. While I was in the chamber, I made a **CONSCIOUS EFFORT** to…

0 10 20 30 40 50 60 70 80 90 100
Allow my emotions to run their course (Neither) Stay in control of my emotions

## Please STOP and await instructions from the experimenter.

---

**For experimenter:**

Time_

## (Before trial 3)
## Claustrophobic Concerns Questionnaire (CCQ)

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**7. My anxiety does not bother me**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

**8. It is bad to feel anxious**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

# Pretreatment Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Trial 3. Chamber Reaction Survey

1. What was the level of fear you experienced upon **ENTERING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced upon **EXITING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

3. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

4. While I was in the chamber, I made a **CONSCIOUS EFFORT** to…

0 10 20 30 40 50 60 70 80 90 100
Allow my emotions to run their course (Neither) Stay in control of my emotions

## Please STOP and await instructions from the experimenter.

---

**For experimenter:**

Time_

## (Before trial 4)
## Claustrophobic Concerns Questionnaire (CCQ)

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**7. My anxiety does not bother me**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

**8. It is bad to feel anxious**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

# Pretreatment Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Trial 4. Chamber Reaction Survey

1. What was the level of fear you experienced upon **ENTERING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced upon **EXITING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

3. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

4. While I was in the chamber, I made a **CONSCIOUS EFFORT** to…

0 10 20 30 40 50 60 70 80 90 100
Allow my emotions to run their course (Neither) Stay in control of my emotions

## Please STOP and await instructions from the experimenter.

---

**For experimenter:**

Time_

## (Before trial 5)
## Claustrophobic Concerns Questionnaire (CCQ)

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**7. My anxiety does not bother me**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

**8. It is bad to feel anxious**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

# Pretreatment Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Trial 5. Chamber Reaction Survey

1. What was the level of fear you experienced upon **ENTERING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced upon **EXITING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

3. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

4. While I was in the chamber, I made a **CONSCIOUS EFFORT** to…

0 10 20 30 40 50 60 70 80 90 100
Allow my emotions to run their course (Neither) Stay in control of my emotions

## Please STOP and await instructions from the experimenter.

---

**For experimenter:**

Time_

## (Before trial 6)
## Claustrophobic Concerns Questionnaire (CCQ)

Instructions: Listed below are statements reflecting common concerns about being in enclosed spaces. If you were to enter the chamber, how concerned would you be by each of the following?

**1. I might be trapped**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**2. I might run out of air**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**3. I might not be able to escape if I had to**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**4. I might have difficulty breathing**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No concern | | Mild concern | | Moderate Concern | | | Strong Concern | | Extreme Concern | |

**5. Estimate your confidence in being able to reduce your fear to a manageable level while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**6. Estimate your confidence in being able to remain in control of your actions while in the chamber**

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| No confidence | | Mild confidence | | Moderate Confidence | | | Strong Confidence | | Extreme Confidence | |

**7. My anxiety does not bother me**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

**8. It is bad to feel anxious**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree Somewhat | Neither Agree nor Disagree | Agree Somewhat | Strongly Agree |

# Pretreatment Prediction Survey

1. Estimate your **EXPECTED LEVEL OF PEAK FEAR** if you were to enter the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. Estimate your **CONFIDENCE THAT YOU COULD** remain in the chamber for 5 minutes Circle one number:

0 10 20 30 40 50 60 70 80 90 100

No Confidence Mild Confidence Moderate Confidence Strong Confidence Extreme Confidence

**Please STOP and await instructions from the experimenter.**

# Trial 6. Chamber Reaction Survey

1. What was the level of fear you experienced upon **ENTERING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

2. What was the level of fear you experienced upon **EXITING** the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

3. What was the **HIGHEST** level of fear you experienced while in the chamber?

0 10 20 30 40 50 60 70 80 90 100
No Fear Mild Fear Moderate Fear Severe Fear Extreme Fear

4. While I was in the chamber, I made a **CONSCIOUS EFFORT** to…

0 10 20 30 40 50 60 70 80 90 100
Allow my emotions to run their course (Neither) Stay in control of my emotions

## Please STOP and await instructions from the experimenter.

---

**For experimenter:**

Time_

# Coping Strategies Questionnaire

While in the chamber, how much of a conscious effort did you make to **DISTRACT** yourself from what was going on?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| No effort | | | | Moderate effort | | | | Strong effort |

If you tried to distract yourself from what was going on, how **SUCCESSFUL** were you?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Totally Successful | | | | Moderately Successful | | | | Very Successful |

While in the chamber, how much of a conscious effort did you make to **PAY ATTENTION** to what was going on?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| No effort | | | | Moderate effort | | | | Strong effort |

If you tried to pay attention to what was going on, how **SUCCESSFUL** were you?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Totally Successful | | | | Moderately Successful | | | | Very Successful |

While in the chamber, how much of a conscious effort did you make to **CONTROL YOUR FEAR AND ANXIETY**?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| No effort | | | | Moderate effort | | | | Strong effort |

If you tried to control your fear and anxiety, how **SUCCESSFUL** were you?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Totally Successful | | | | Moderately Successful | | | | Very Successful |

While in the chamber, how much of a conscious effort did you make to **ACCEPT YOUR FEAR AND ANXIETY**?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| No effort | | | | Moderate effort | | | | Strong effort |

If you tried to accept your fear and anxiety, how **SUCCESSFUL** were you?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Totally Successful | | | | Moderately Successful | | | | Very Successful |

# APPENDIX C: EQUATIONS

# FOR HLM ANALYSES

**Step 1: Modeling Process Variables Across Exposure Trials**

1A. IV: Session
DV: Fear

Level 1: $FEAR = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(TRIAL)^2 + r_{ij}$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Dummy_{ACC}) + \gamma_{02}(Dummy_{SUP}) + \gamma_{03}(FEAR_{BL}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Dummy_{ACC}) + \gamma_{12}(Dummy_{SUP}) + \gamma_{13}(FEAR_{BL}) + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(Dummy_{ACC}) + \gamma_{22}(Dummy_{SUP}) + \gamma_{23}(FEAR_{BL}) + u_{2j}$$

1B. IV: Session
DV: Entrapment Expectancies

Level 1: $ENT\_EXP = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(TRIAL)^2 + r_{ij}$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Dummy_{ACC}) + \gamma_{02}(Dummy_{SUP}) + \gamma_{03}(ENT\_EXP_{BL}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Dummy_{ACC}) + \gamma_{12}(Dummy_{SUP}) + \gamma_{13}(ENT\_EXP_{BL}) + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(Dummy_{ACC}) + \gamma_{22}(Dummy_{SUP}) + \gamma_{23}(ENT\_EXP_{BL}) + u_{2j}$$

1C. IV: Session
DV: Suffocation Expectancies

Level 1: $SUFF\_EXP = \beta_{0j} + \beta_{1j}(TRIAL) + r_{ij}$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Dummy_{ACC}) + \gamma_{02}(Dummy_{SUP}) + \gamma_{03}(SUFF\_EXP_{BL}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Dummy_{ACC}) + \gamma_{12}(Dummy_{SUP}) + \gamma_{13}(SUFF\_EXP_{BL}) + u_{1j}$$

(Quadratic term was dropped because quadratic coefficient was not found to be significant.)

1D. IV: Session
DV: Coping Self-Efficacy

Level 1: $SELF\_EFF = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(TRIAL)^2 + r_{ij}$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Dummy_{ACC}) + \gamma_{02}(Dummy_{SUP}) + \gamma_{03}(SELF\_EFF_{BL}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Dummy_{ACC}) + \gamma_{12}(Dummy_{SUP}) + \gamma_{13}(SELF\_EFF_{BL}) + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(Dummy_{ACC}) + \gamma_{22}(Dummy_{SUP}) + \gamma_{23}(SELF\_EFF_{BL}) + u_{2j}$$

1E. IV: Session
DV: Acceptance of Anxiety—Item 1

Level 1: $ACCANX1 = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(TRIAL)^2 + r_{ij}$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(Dummy_{ACC}) + \gamma_{02}(Dummy_{SUP}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(Dummy_{ACC}) + \gamma_{12}(Dummy_{SUP}) + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(Dummy_{ACC}) + \gamma_{22}(Dummy_{SUP}) + u_{2j}$$

**Step 2: Do Process Variables Account for Reductions in Fear?**

**Path *c'*:** $FEAR = \beta_{0j} + \beta_{1j}(TRIAL) + r_{ij}$

**Paths *a*:** $ENT\_EXP = \beta_{0j} + \beta_{1j}(TRIAL) + r_{ij}$

$SUFF\_EXP = \beta_{0j} + \beta_{1j}(TRIAL) + r_{ij}$

$SELF\_EFF = \beta_{0j} + \beta_{1j}(TRIAL) + r_{ij}$

$ACCANX1 = \beta_{0j} + \beta_{1j}(TRIAL) + r_{ij}$

**Paths *b* (individual models):**

$FEAR = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(ENT\_EXP) + r_{ij}$

$FEAR = \beta_{0j} + \beta_{1j}(TRIAL) + \beta_{2j}(SUFF\_EXP) + r_{ij}$

$$FEAR = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + \beta_{2j}\,(SELF\_EFF) + r_{ij}$$

$$FEAR = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + \beta_{2j}\,(ACCANX1) + r_{ij}$$

**Paths *b* (combined model):**

$$FEAR = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + \beta_{1j}\,(ENT\_EXP) + \beta_{2j}\,(SUFF\_EXP)$$
$$+ \beta_{3j}\,(SELF\_EFF) + \beta_{4j}\,(ACCANX1) + r_{ij}$$

### 4.6.4 Step 3: Are These Mediational Pathways Treatment-Specific?

**Path *c'*:**

**Level 1:** $FEAR = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + r_{ij}$

**Level 2:**

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\,(Dummy_{ACC}) + \gamma_{02}\,(Dummy_{SUP}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}\,(Dummy_{ACC}) + \gamma_{12}\,(Dummy_{SUP}) + u_{1j}$$

**Paths *a*:**

**Level 1:** $ENT\_EXP = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + r_{ij}$

$SUFF\_EXP = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + r_{ij}$

$SELF\_EFF = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + r_{ij}$

$ACCANX1 = \beta_{0\,j} + \beta_{1j}\,(TRIAL) + r_{ij}$

**Level 2 (for all Level 1 models):**

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\,(Dummy_{ACC}) + \gamma_{02}\,(Dummy_{SUP}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}\,(Dummy_{ACC}) + \gamma_{12}\,(Dummy_{SUP}) + u_{1j}$$

**Paths *b*:**

$$\text{FEAR} = \beta_{0\,j} + \beta_{1j}\,(\text{TRIAL}) + \beta_{1j}\,(\text{ENT\_EXP}) + \beta_{2j}\,(\text{SUFF\_EXP})$$

$$+ \beta_{3j}\,(\text{SELF\_EFF}) + \beta_{4j}\,(\text{ACCANX1}) + r_{ij}$$

**Level 2:**

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\,(\text{Dummy}_{\text{ACC}}) + \gamma_{02}\,(\text{Dummy}_{\text{SUP}})$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}\,(\text{Dummy}_{\text{ACC}}) + \gamma_{12}\,(\text{Dummy}_{\text{SUP}}) + u_{1j}$$

$$\beta_{2j} = \gamma_{00} + \gamma_{01}\,(\text{Dummy}_{\text{ACC}}) + \gamma_{02}\,(\text{Dummy}_{\text{SUP}}) + u_{2j}$$

$$\beta_{3j} = \gamma_{10} + \gamma_{11}\,(\text{Dummy}_{\text{ACC}}) + \gamma_{12}\,(\text{Dummy}_{\text{SUP}}) + u_{3j}$$

$$\beta_{4j} = \gamma_{00} + \gamma_{01}\,(\text{Dummy}_{\text{ACC}}) + \gamma_{02}\,(\text{Dummy}_{\text{SUP}})$$

Because of our relatively limited sample size, we were unable to produce a model including random effects for all Level 2 equations. We first chose to omit the random effect for the intercept term, and were able to run the model. We then examined the significance of all random effects, and found that the error term for $\beta_{4j,}$ $u_{4j}$, was not significant. We therefore omitted this term and re-ran the model.

# APPENDIX D: TREATMENT-SPECIFIC RATIONALE SCRIPTS

**ACC GROUP SCRIPT**

Welcome to the Claustrophobia Treatment project at the University of Texas. This study is designed to better understand how confronting one's fears can lead to reductions in fear, and it is one of many research projects we have conducted that aim to improve our already powerful treatments for phobias.

For several decades now, psychologists have been studying the fear response in humans and animals, and we have learned a great deal about fear and how people can best deal with it. Fear is a powerful emotion. And it should be, since mother nature designed the fear response to protect us. When we are scared, we feel strong bodily sensations, such as sweaty palms, shortness of breath, and a racing heart. These bodily reactions serve a purpose: to prepare us to flee from a dangerous situation. In our evolutionary past, this was often helpful, because life-threatening situations were far more common. And our fearful reactions can still be helpful, when a real danger is present. However, the fear response can be a problem when there is no real danger. For example, when you have claustrophobia and you enter a small space, your brain sends signals to your body to prepare for imminent danger—even though no real danger exists.

Fortunately, this automatic fear response can be reduced and extinguished through exposure therapy. In exposure therapy, you repeatedly enter into a non-dangerous but fear-provoking situation, until the fear naturally begins to subside. As you continue to activate the physiological fear response without any negative consequences, your brain will start to turn off that fear. This reduction in fear is very well-established principle of behavior, and it can be seen to occur in all people, and even in all animals. To put it simply, if you confront the feared situation repeatedly, your fear will reduce until you no longer feel frightened at all.

In a few minutes, we will begin the therapy. You will be asked to enter a small chamber and remain there for several minutes at a time. By repeatedly entering the chamber and remaining there until the fear response subsides, you will essentially be training your brain and body not to respond fearfully to entering enclosed spaces. Since this exercise is frightening but not at all dangerous, your automatic fear response will soon subside, and you will be able to enter small spaces without feeling frightened or anxious.

**During the treatment, you will be likely to experience some feelings of fear and anxiety. The way that you deal with these feelings can have a big effect on how well the treatment works.**

Most people report that entering the chamber is distressing and produces emotions like anxiety and fear. And, many people also think that their negative emotions must be controlled or stopped. They may have learned from an early age, that they can and should control negative thoughts and feelings. People are told things like "just stop worrying" or "put it behind you". Moreover, you see people controlling their feelings on many occasions, such as at funerals or in crisis situations, and you may come to believe that people should always try to control their emotions.

In some cases you can control your feelings. If you are feeling too cold in your house you can turn up the heat. If you are feeling uncomfortable in a chair you can stand up and move around. Certain actions can be taken to control our inner experiences. In the same way, emotional control can sometimes work in temporary ways. Distraction, for example, can help you feel less pain while you're in a dentist's chair.

However, it is often not so easy to control or stop emotions like anxiety, sadness, anger, or fear. Just think of how difficult it is to follow through on another person's suggestion to "just calm down" or "just relax" when you are feeling upset. It's not as easy as it sounds, right?

Given that you have experienced some difficulty with emotions like anxiety or fear, efforts to block these feelings are quite understandable. However, although self-control may work in many areas of your life, there are situations involving emotions where sefl-control might be difficult or even impossible. Struggling against relatively natural emotions can actually intensify and prolong your distress, rather than making the situation better. Moreover, if you try to suppress your emotions and are unable to do so, this may lead to feelings of failure, guilt, or lack of control. Finally, your efforts to block out negative emotions may become a constant battle, draining you of energy and happiness.

So, am I suggesting that you just give up on changing your emotional experiences? No, what I'm suggesting is that there is an alternative to struggling or battling with your emotions and it is called

acceptance. Accepting your emotions means that you are willing to experience them fully and that you don't try to control or change your emotions in any way.

Am I proposing that you should just put up with discomfort and distress? No, what I'm suggesting is that you can come to think about your emotions in a different way; not as something that always needs to be contained or controlled in order for you to be OK, but as natural reactions that occur, peak, and fade without leading to any awful consequences and without you having to struggle or fight with your feelings at all.

Accepting emotions like anxiety and sadness may be difficult, especially when common sense tells you that these emotions are bad. There are times in life, however, when our common-sense reactions get us into trouble. Have you ever driven your car on a sheet of ice and lost control? Usually, the mistake people make is that they try to correct the situation by turning in the opposite direction from which they are skidding. This seems to make sense, but the more effective approach is to do the opposite – to turn the wheel into the direction of the skidding.

What I am suggesting is that dealing effectively with your emotions may be very similar. It is against your natural reaction to allow yourself to feel negative feelings. However, just like turning into the direction of the skidding is a better way of dealing with icy road conditions, leaning into your emotions and fully experiencing them may be a better way of dealing with emotional situations.

So, if emotions occur while you are in the machine, try to give up the struggle to suppress or control them. Allow yourself to accept and stay with your emotions without trying to get rid of them. Pay close attention to the physical feelings of anxiety: racing heart, shortness of breath, and sweaty palms. Whenever you notice these sensations, just allow them to come and go. .Refrain from attempts to distract yourself or otherwise lessen your feelings, and instead allow yourself to feel your emotions as fully as possible. Just let your emotions run their natural course and see how that goes.

The more you allow yourself to fully experience your emotions, the more effective the treatment will be. The treatment will begin shortly. Thank you for your participation in this study, and best of luck conquering your claustrophobia. Please tell the experimenter that you are ready to proceed.

**SUP GROUP SCRIPT**

Welcome to the Claustrophobia Treatment project at the University of Texas. This study is designed to better understand how confronting one's fears can lead to reductions in fear, and it is one of many research projects we have conducted that aim to improve our already powerful treatments for phobias.

For several decades now, psychologists have been studying the fear response in humans and animals, and we have learned a great deal about fear and how people can best deal with it. Fear is a powerful emotion. And it should be, since mother nature designed the fear response to protect us. When we are scared, we feel strong bodily sensations, such as sweaty palms, shortness of breath, and a racing heart. These bodily reactions serve a purpose: to prepare us to flee from a dangerous situation. In our evolutionary past, this was often helpful, because life-threatening situations were far more common. And our fearful reactions can still be helpful, when a real danger is present. However, the fear response can be a problem when there is no real danger. For example, when you have claustrophobia and you enter a small space, your brain sends signals to your body to prepare for imminent danger—even though no real danger exists.

Fortunately, this automatic fear response can be reduced and extinguished through exposure therapy. In exposure therapy, you repeatedly enter into a non-dangerous but fear-provoking situation, until the fear naturally begins to subside. As you continue to activate the physiological fear response without any negative consequences, your brain will start to turn off that fear. This reduction in fear is very well-established principle of behavior, and it can be seen to occur in all people, and even in all animals. To put it simply, if you confront the feared situation repeatedly, your fear will reduce until you no longer feel frightened at all.

In a few minutes, we will begin the therapy. You will be asked to enter a small chamber and remain there for several minutes at a time. By repeatedly entering the chamber and remaining there until the fear response subsides, you will essentially be training your brain and body not to respond fearfully to entering enclosed spaces. Since this exercise is frightening but not at all dangerous, your automatic fear response will soon subside, and you will be able to enter small spaces without feeling frightened or anxious.

**During the treatment, you will be likely to experience some feelings of fear and anxiety. The way that you deal with these feelings can have a big effect on how well the treatment works.**

Most people report entering the machine is distressing and produces emotions like anxiety and fear. In addition, many people do not do anything to try to control their emotional reactions, which makes the experience even more distressing. Although experiencing anxiety and other negative emotions is normal when entering the machine, it is possible to experience these emotions at lower levels if you really concentrate on controlling them.

There is a great deal of evidence that people can control their emotional reactions. You see people controlling their emotions all of the time, such as at funerals or in crisis situations where it is important to remain calm. There are many cases in which you can do simple things to control your feelings. If you are feeling too cold in your house you can turn up the heat. If you are feeling uncomfortable in a chair you can stand up and move around. Certain actions can be taken to control our inner experiences. In the same way, emotional control can often work to change our experiences. For example, distraction can help you feel less pain while you are in a dentist's chair.

Think of it – we have all sorts of phrases in our language that refer to people controlling their own emotional experiences. We often tell people to "calm down" when they are feeling anxious or angry. We use phrases such as "grin and bear it" or "put it behind you" to convey that it is possible to make it through a difficult experience if you are able to control your emotions. In challenging situations, people are frequently able to do things that help them bring their emotions down to a more manageable level.

Given that you have experienced some difficulty with emotions like anxiety or sadness, it is understandable that you would consider suppressing your emotional reactions to be a difficult task. However, think of other areas in your life where you have been capable of self-control. If you are like most people, you do not feel like jumping right out of bed when your alarm clock goes off in the morning. But many times in your life you have gotten out of bed and prepared yourself for school, work, or other obligations. Initially, you may have had negative feelings like fatigue or disappointment over having to get up, but you battled those feelings successfully and started your day.

I'm sure there are other times in your life when you have not allowed your feelings to take control. For instance, you might think of a time when you forced yourself to go to the gym despite feeling tired or made yourself study for an important test even though you would have preferred to relax. Although self-control can be hard at first, when you are successful you feel proud of yourself -- like you have accomplished something important. The same is true of controlling your negative emotions. When you succeed at keeping your feelings under control, you feel proud of yourself for coping effectively with an emotional situation. However, when you just let your negative emotions run their own course and they intensify, you may end up feeling discouraged, guilty, or out of control.

So, what exactly am I suggesting here? Basically, I am suggesting that you have more control over your emotional reactions than you think. You can exert control over the occurrence and intensity of your emotional states and you probably have done so successfully in the past. Although many emotions fade away after a while, you should not have to put up with more discomfort and distress than is necessary.

Rather than just allowing your feelings to run their own course, I would like you to really test out your ability to control your emotional reactions. Whenever you experience emotions like anxiety or fear while you are in the machine, please try to control them as much as possible. Pay close attention to the physical feelings of anxiety: racing heart, shortness of breath, and sweaty palms. Do your best to control these physical symptoms of anxiety. Try not to show what you are feeling, and attempt to minimize the amount of anxiety and other emotions you feel in response to the situation. See just how much control you can exert over your own distress and discomfort.

And remember, the treatment will be more effective the more you can control your strong emotions during this session. The treatment will begin shortly. Thank you for your participation in this study, and best of luck conquering your claustrophobia. Please tell the experimenter that you are ready to proceed.

**EO GROUP SCRIPT**

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In a few minutes, we will begin the therapy. You will be asked to enter a small chamber and remain there for several minutes at a time. By repeatedly entering the chamber and remaining there until the fear response subsides, you will essentially be training your brain and body not to respond fearfully to entering enclosed spaces. Since this exercise is frightening but not at all dangerous, your automatic fear response will soon subside, and you will be able to enter small spaces without feeling frightened or anxious.

The treatment will begin shortly. Thank you for your participation in this study, and best of luck conquering your claustrophobia. Please tell the experimenter that you are ready to proceed.

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# VITA

Jonathan David Horowitz attended Morris Hills High School in Rockaway, New Jersey. In 1997 he entered the University of North Carolina at Chapel Hill. He received the degree of Bachelor of Arts from the University of North Carolina at Chapel Hill in May, 2001. During the following years he was employed as an account executive at Mutek Solutions, a software company in Raleigh, NC, and as s research assistant at Massachusetts General Hospital in Boston, MA. In August, 2003, he entered the Graduate School at the University of Texas at Austin. During the academic year of 2008-2009, he completed his predoctoral internship at the University of California at San Diego and the San Diego Veterans Administration Healthcare System.

Permanent Address: 5061 Foothill Blvd., San Diego, CA 92109.

This dissertation was typed by the author.