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Altering shyness mindset: enhancing treatment for social performance anxiety

Michael J. Gillen

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The current study looked to extend previous research on the meta-cognitive variable of shyness mindset. The objectives were to demonstrate the ability to promote an incremental view of shyness in a clinical population, provide evidence for this change’s ability to enhance the reduction of social performance anxiety symptoms via exposure therapy, and elucidate the possible mechanisms involved. Participants were recruited from an intensive outpatient program for the treatment of anxiety disorders, and assigned to either receive an intervention designed to alter shyness mindset, or treatment as usual. Results indicated that shyness mindset was malleable in a clinical population. The effect of shyness mindset on social performance anxiety symptoms was less clear, though the most parsimonious interpretation of the data suggested that the two constructs do not have a causal relationship. The mechanisms of any possible relationship remained unclarified.
ALTERING SHYNESS MINDSET: ENHANCING TREATMENT FOR SOCIAL PERFORMANCE ANXIETY

BY

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A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

Doctoral Director: David P. Valentiner
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CHAPTER 1
BACKGROUND

Introduction

In recent years, the meta-cognitive construct of shyness mindset has been found to be an important factor in social behavior, social anxiety, and treatment for social anxiety disorder (e.g., Beer, 2002; Valentiner, Jencius, Jarek, Gier-Lonsway, & McGrath, 2013; Valentiner, Mounts, Durik, & Gier-Lonsway, 2011). The current study aimed to integrate and extend elements of this literature utilizing a treatment outcome framework. Presented first is a review of the relevant literature in regards to social anxiety disorder, the concept of mindset as developed in the intelligence domain, and the extension of the mindset concept into other realms (most importantly for the current study, shyness). A rationale for the current study will then be presented, followed by the method, results, and discussion of findings of said study.

Social Anxiety Disorder

Social anxiety disorder (SAD; or social phobia) is characterized by a significant and pervasive fear of social situations where an individual may be exposed to unfamiliar scenarios or to the evaluation of others (American Psychiatric Association [APA], 2013). It was first introduced as a diagnostic category in the 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 1980). The disorder is more than simply exaggerated shyness
(Schneier et al., 1996). The types of scenarios that elicit anxiety may be very specific and small (or even single) in number; in the literature, this is sometimes referred to as specific or discrete social anxiety. Conversely, an individual may experience such fear in numerous or nearly all social situations, termed generalized social anxiety. Feared situations are fairly limitless in possibility, though some of the more common scenarios involve speaking in front of others, eating in front of others, engaging in social conversation, and attending social events (Beidel & Turner, 2007). Such activities are often avoided by individuals with social anxiety, or experienced with significant anxiety and distress (APA, 2013). Generally this anxiety includes a physiological element, be it panic attacks or more mild clusters of such symptoms like heightened blood pressure, increased rate of respiration, and elevated heart rate; these physiological responses have even been shown to discriminate between clinical and non-clinical groups (Turner, Beidel, & Larkin, 1986). Childhood or adolescence most typically marks the initial developmental period for SAD (Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). Left untreated, the disorder typically follows a chronic and unremitting course (Stein & Kean, 2001).

**Impact of Social Anxiety**

In early formulations of social anxiety, the disorder was often dismissed as one that had relatively minor complications for a small number of individuals, primarily in public speaking situations. This view perhaps accounted for the lack of research on the topic compared to other anxiety disorders, a state of affairs lasting into the 1980s (Beidel & Turner, 2007). However, it is now clear that individuals with SAD suffer from a variety of impairments, ranging from
relatively mild to debilitating, in various areas of functioning, such as employment, education, and social relationships (Katzelnick et al., 2001; Kessler, 2003). These impairments often manifest themselves in reduced educational attainment, significant restriction of social experiences, stunted career advancement, and may affect decisions such as which college to attend and what careers and/or jobs to pursue (Kessler, 2003; Lecrubier et al., 2000). Such impairments can be widespread among individuals with SAD; one study found that 96% of clinical patients with the disorder reported experiencing harm to their careers due to their anxiety (Turner, Beidel, Dancu, & Kays, 1986). Similar pervasiveness regarding impairments to social and educational functioning have also been reported (e.g., Simon et al., 2002). Those with the disorder report low levels of life satisfaction (Hambrick, Turk, Heimberg, Schneier, & Liebowitz, 2003). Some studies have found that individuals with SAD display an increased prevalence of suicidal ideation and suicide attempts in comparison with the general population (e.g., Keller, 2003).

**Prevalence and Comorbidity**

Using data from a sample of over 9,000 individuals in the United States, the National Comorbidity Survey Replication Study estimated that 12.1% of individuals in this country will meet diagnostic criteria for SAD at some point in their lives, and estimated the 12-month prevalence rate at 6.8% (Kessler et al., 2005). This lifetime prevalence made SAD the fourth most prevalence mental health disorder, following major depressive disorder, alcohol abuse, and specific phobia. Other studies, however, have estimated lower lifetime prevalence rates using more stringent criteria (e.g., 4-7%, Furmark, 2002; Narrow, Rae, Robins, & Reiger,
2002). The disorder appears to have a relatively equal gender distribution, with studies finding a female to male ratio between 1:1 (Moutier & Stein, 1999) and 3:2 (Kessler et al., 2005). This equal split between genders appears to be the case for treatment-seeking individuals as well (Hofmann & Barlow, 2002). Kessler et al. (2005) reported relatively equal prevalence between Caucasian and African-American adults, though treatment-seeking studies show higher numbers of Caucasian individuals (e.g., Turner & Beidel, 2002, as cited in Beidel & Turner, 2007). Some evidence exists for an increasing rate of SAD across age cohorts during the second half of the 20th century, particularly for individuals who were Caucasian (Heimberg, Stein, Hiripi, & Kessler, 2000).

Between 70-90% of individuals diagnosed with SAD will also meet criteria for other diagnoses in their lifetimes, with SAD often predating the comorbid disorders (e.g., Grant et al., 2005; Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Ruscio et al., 2008). Some of the most common comorbid disorders are major depression, generalized anxiety disorder, specific phobia, alcohol abuse, and alcohol dependence (Wenzel, 2010). A diagnosis of SAD is associated with increased use and abuse of substances such as alcohol, benzodiazepines, and other drugs; these substances are often used to manage an individual’s anxiety level (Schneier et al., 1992). Unsurprisingly, such comorbidity is associated with greater impairment in functioning (Erwin, Heimberg, Juster, & Mindlin, 2002).
Etiology

Several factors contribute to the development of SAD. Some of the biggest contributions come from the areas of genetics, temperament, learning and conditioning effects, and the family environment.

Genetics

It is believed that SAD has a heritable basis (e.g., Hettama, Neale, & Kendler, 2001), and it appears to run in families (Stein et al., 1998). As such, genetic influences would appear to play at least some role in the development of SAD. Some studies have attempted to identify particular genes or sets of genes that serve as markers of SAD, with some level of success (e.g., Gelernter, Page, Stein, & Woods, 2004; Kennedy et al., 2001). Additionally, association studies have focused on some of the traits often linked with SAD. Traits such as neuroticism and shyness have demonstrated varying levels of genetic basis in multiple studies (e.g., Arbelle et al., 2003; Hettama, Neale, Myers, Prescott, & Kendler, 2006), and these traits (among others) are generally understood as contributing factors to the development of SAD (e.g., Ormel, Oldehinkel, & Brilman, 2001).

Temperament

Temperament is a biologically-based susceptibility for certain feelings and behaviors that generally arises during early childhood (or even infancy) and later forms part of the basis for personality traits (Kagan, 2010). One facet of temperament with particular relevance to the development of SAD is that of behavioral inhibition, often manifest as unease with and
avoidance of unfamiliar situations, people, occurrences, or objects (Garcia-Coll, Kagan, & Reznick, 1984). Behavioral inhibition has been shown to be related to the later development of SAD (e.g., Hayward, Killen, Kaemer, & Taylor, 1998; Schwartz, Snidman, & Kagan, 1999). However, it is important to note that not all children who evidence behavioral inhibition when young go on to develop anxiety disorders or SAD specifically; over time, previous behavioral inhibition becomes less and less predictive of current personality and psychopathology (e.g., Kagan & Snidman, 2004). Overall, behavioral inhibition certainly appears to be a risk factor for SAD, but alone it does not appear to be sufficient for its development, and in fact may not always be necessary (Turner, Beidel, & Wolff, 1996).

The personality trait of shyness also appears to play a role in the development of SAD. Individuals who are shy do not always meet criteria for SAD (Heiser, Turner, & Beidel, 2003). However, those individuals with extreme shyness have met criteria for SAD at levels as high as 97% (St. Lorant, Henderson, & Zimbardo, 2000). However, shyness has been conceptualized as highly heterogeneous, and the presence of shyness at lower than chronic, debilitating levels does not appear to be quite as predictive of SAD (Turner, Beidel, & Townsley, 1990). Behavioral inhibition has been conceptualized as a precursor of shyness, which in turn can be a precursor to SAD (Kagan & Snidman, 1991). However, displaying behavioral inhibition as a young child becomes less predictive of personality traits as children age, and shyness appears to decrease with age (Caspi, Elder, & Bem, 1988).
Learning and Conditioning Effects

Some studies of SAD have shown that the prevalence of a traumatic social event may contribute to the disorder’s development in as much as 58% of cases (Ost, 1985; Stemberger, Turner, Beidel, & Calhoun, 1995). Studies of observational learning have also shown that the witnessing of others’ experiences with social anxiety may play a role in the development of some cases of SAD (e.g., Ost & Hughdahl, 1981). Additionally, social experiences that are negative, or at least perceived as such, often contribute the development and maintenance of the disorder. For example, levels of social anxiety are higher in children and adolescents who are neglected by their peers (e.g., LaGreca, Dandes, Wick, Shaw, & Stone, 1988). This social failure may combine with other factors to increase the likelihood of developing SAD (Asendorpf, 1990). Peer victimization has been shown to be strongly associated with SAD (Siegel, La Greca, & Harrison, 2009). Arguments and data supporting the bidirectionality of the relationship between SAD and negative social experiences have also been put forth (e.g., Alden & Regambal, 2011; Siegel et al., 2009).

Family Environment

Much of the learning effects that play a role in the etiology of SAD occur specifically within the family environment. There is significant evidence of the link between parental behaviors and the social competence of children (e.g., Parke & Bhavnagri, 1989). Parents who are anxious themselves may avoid exposing their children to social activities, both for the sake of their own anxiety reduction and/or their belief that they are protecting their children from danger, thus promoting social avoidance (Daniels & Plomin, 1985). Parents of anxious children
often encourage avoidance behavior (perhaps inadvertently) and discourage extroverted behavior (Dadds, Barrett, Rapee, & Ryan, 1996). Parental behaviors indicative of overprotection and/or rejection have also been associated with an increased prevalence of SAD (e.g., Lieb et al., 2000). Given the pervasive influence of parents on the lives of their children, these learning experiences likely begin when the child is quite young and can be a fairly constant presence for many years, making it no surprise that they can have such an effect on development.

Models of SAD

Several models of SAD and its key components have been put forth in the literature. Only two of the most influential models will be presented here, though it is important to note that other models also provide important viewpoints on the disorder (e.g., Moscovitch, 2009).

Clark and Wells Model

The most influential model of SAD is that put forth by Clark and Wells (1995; see also Clark, 2001). In this cognitive-behavioral formulation, when an individual with SAD enters a feared social situation, a host of negative automatic thoughts are activated, many of which concern the likelihood of social failure or embarrassment (e.g., “they are going to think I’m stupid”) and the high cost of such failure (e.g., “it’s unbearable to appear to be so foolish”). As their name suggests, these thoughts arise quickly and often outside of conscious awareness. Once the individual perceives danger in the social situation, their attention shifts away towards internal or self-focused attention, vigorously monitoring their own behavior at the expense of
an outward, external focus of attention (i.e., noticing and responding to other people, environmental cues, etc.), in an attempt to manage their outward signs of anxiety. This internal focus of attention produces a heightened awareness of the individual’s anxiety response (e.g., blushing, sweating, shaking), which is also activated by the perception of social danger. These anxiety symptoms further increase the individual self-focus of attention, as they are perceived as a sign communicating their nervousness to others. This internal focus of attention prevents the processing of information in the environment that may serve to disprove the individual’s fears. At the same time, the perception of social danger leads to the utilization of safety behaviors, which are behaviors intended to minimize in-situation anxiety and its appearance to others. These behaviors may include avoiding eye contact, wearing outer layers of clothing to hide sweating and/or shaking, or avoiding conversation and interaction altogether. These safety behaviors prevent the individual from experiencing an unambiguous disconfirmation of their faulty beliefs regarding the social situation (any positive outcome is associated with the safety behaviors rather than a recognition of the lack of danger in social situations), and they may at times make an individual’s feared behavior more likely (e.g., wearing extra layers of clothing may increase sweating).

Additionally, important elements occur prior to and following a social situation. Anticipatory anxiety is a common experience for individuals with SAD, in which they fear upcoming possible social situations. This anxiety may cause the individual to avoid the feared social situation altogether, producing a reduction in anxiety and therefore negatively reinforcing the avoidance behavior. Or, should the individual enter the feared social situation, this anticipatory anxiety will likely have the individual primed to expect failure and already
engaged in a self-focused attentional pattern. Following the social situation, post-event processing occurs in which the individual replays the situation in his or her mind. Cognitive biases towards negative self-evaluation dominate, and the individual’s perception of the negative elements of the situation can grow over time, while positive elements of the situation are easily forgotten.

This model has had important implications for treatment, particularly in the recognition of the need for an external focus of attention and the dropping of safety behaviors during exposure therapy for SAD. In years previous to the introduction of this model, it was unclear why individuals with SAD did not appear to benefit from exposures as much as those with other anxiety disorders. Individuals’ use of an internal focus of attention and safety behaviors were found to account for this, as their use prevents the disconfirmation of beliefs during exposure sessions (Wells et al., 1995).

Rapee and Heimberg Model

Drawing on elements of previous models such as that of Clark and Wells (1995) and others, Heimberg, Brozovich, and Rapee (2010) have recently updated their original, influential cognitive-behavioral model of SAD (Rapee & Heimberg, 1997). According to this model, when an individual with SAD enters a social situation, his or her focus is on the individual’s perception of an audience for their behavior. In response to this perception, the individual forms a mental representation of how they think they are being perceived by this audience. This representation is generally biased in the direction of negative self-beliefs and self-schema. The individual then splits attentional resources between monitoring the environment for cues
indicating negative evaluation, monitoring their own behavior and appearance for flaws, and attempting to attend to and engage in the social task at hand. Due to this split, and the limited nature of attentional resources, the individual is hampered in their ability to successfully engage in the social activity. The individual then begins to compare their perceived social performance with what they believe is the expected standard (typically overestimated), generally judging his or her performance as falling short. Focusing on this discrepancy, the individual overestimates the likelihood and cost of social failure in the situation. This overestimation leads to cognitive (e.g., thinking “they can’t possibly be interested in me”), behavioral (i.e., safety behaviors), and physical (i.e., physiological arousal) symptoms. The perception of these internal and external cues further heightens the individual’s awareness of the audience and their perceived judgment. As a whole, this process results in a positive feedback loop than maintains and even increases anxiety during a social interaction. Following the interaction, rumination in the form of post-event processing generally occurs.

As is evident, these models are similar in nature. Both consider the fear of negative evaluation to be the central component of SAD, and share similar concepts (e.g., safety behaviors). However, Rapee and Heimberg’s model does not suggest that individuals with SAD rely on an internal focus of attention as exclusively as the Clark and Wells model purports. Also, cognitive symptoms (or negative automatic thoughts) occur later during a feared social situation in Rapee and Heimberg’s model than in that of Clark and Wells. Overall, both models likely provide significant value in the understanding and treatment of SAD.
Performance vs. Interaction Anxiety

Some researchers have proposed an alternative formulation of the subtypes of SAD, focusing less on the number of fear situations (specific vs. generalized), but rather the type (Carter & Wu, 2010a). Mattick and Clarke (1998) put forth the idea, inspired by Leary (1983), that social anxiety can be conceptualized as consisting of two main fears: scrutiny by others during a performance task (e.g., speaking, eating, or urinating in front of others), which generally maps onto specific SAD, and the more general fear of interaction with others (e.g., appearing foolish, having nothing to say), which largely maps onto generalized SAD. Currently, these types are labeled performance anxiety and interaction anxiety, respectively.

Building upon these ideas, Hook and Valentinier (2002) argued that, rather than the specific/generalized subtypes representing a quantitative distinction, as some authors have suggested (e.g., Hofmann, 2000), the distinction is in fact qualitative. Further, they argued that the specific subtype of SAD is best viewed as a fear of specific performance situations (performance anxiety), while the generalized subtype is best viewed as a fear of situations that involve interactions with others (interaction anxiety). In addition to the differences in types of situations feared, the authors cite as evidence for this qualitative distinction differing ages of onset (with generalized SAD appearing earlier), differences in physiological responses in social situations, and differences in causal factors (with generalized SAD being more relatively influenced by genetics, while specific SAD is more relatively influenced by environmental/learning factors).

Other authors have also demonstrated a difference in correlates for specific and generalized SAD, supporting a qualitative distinction between the two (Carter & Wu, 2010a,
2010b). However, in contrast to Hook and Valentiner (2002), Carter and Wu (2010a) speculate that specific SAD may represent a fear of performance situations, while generalized SAD may represent a fear of both performance and interaction situations. This conceptualization may be more consistent with the recently developed diagnostic criteria for SAD as described in the most current *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; APA, 2013). In DSM-5, the specifier “performance only” is used to identify individuals whose fear of evaluation is restricted to speaking or performing in public (i.e., performance anxiety). The diagnosis of SAD, sans said specifier, is assumed to designate those individuals whose fears include either interaction anxiety alone or a combination of interaction and performance anxiety. Overall, although the distinction between performance and interaction anxiety appears to be valid and useful, it is not entirely clear at this point how exactly that distinction may be manifest.

**Treatment of SAD**

Although there have been many studies investigating the efficacy of pharmacological treatments for SAD (for review, see Blanco, Schneier, Okuda, & Liebowitz, 2010), this discussion will be limited to psychological treatments, due to the particular relevance of such approaches to the current study. Psychological treatments for SAD have included cognitive therapy, exposure therapy, relaxation training, social skills training, and various other approaches.

Of particular importance to this study are treatments consisting of exposure therapy, cognitive therapy, and the combination of the two, cognitive-behavioral therapy (CBT).
Exposure therapy involves an individual exposing themselves to a feared situation or stimulus (e.g., public speaking) and maintaining contact with that stimulus until their anxious arousal subsides, at least partially, and he or she learns that the stimulus is in fact not dangerous (Foa & Kozak, 1986). Cognitive therapy involves, among other techniques, the identification of distorted or maladaptive thoughts (e.g., overestimation of the likelihood of social judgment) and the restructuring of these thoughts into more adaptive, rational ones (Beck, 1995). The combination of these two approaches, CBT, utilizes techniques from both. Although approaches such as relaxation training may offer anxiety relief, they do not appear to allow individuals to relearn associations of safety with feared situations, as treatments in the CBT tradition appear to do (Otto, Smits, & Reese, 2004).

In a recent meta-analysis, Powers, Sigmarsson, and Emmelkamp (2008) identified 32 randomized controlled trials of psychological treatments for SAD. Treatment demonstrated a clear advantage compared to waitlist, psychological placebo, and pill-placebo ($d$s ranging from 0.34 to 0.86) in reduction of primary symptom measures. No significant differences were found between cognitive therapy, exposure therapy, or CBT, nor were there any differences found between individual and group treatments. In a qualitative review of psychological interventions for SAD, Ponniah and Hollon (2008) identified 30 studies examining the efficacy of exposure therapy, cognitive therapy, CBT, and social skills training. There was little evidence for the efficacy of social skills training. The authors concluded that there was sufficient evidence to consider exposure therapy, cognitive therapy, and combined CBT efficacious treatments using the criteria set forth by Chambless & Hollon (1998). The authors reported mixed evidence on the relative efficacy of these three approaches, with some studies finding no differences, while
others found that CBT was superior. Overall, the authors of both reviews contend that exposure therapy, cognitive therapy, and CBT have each been shown to be beneficial to individuals with SAD, although the relative differences remain unclear.

**Intelligence Mindset**

Drawing from the work of philosophers and early psychologists on how an individual’s beliefs form a meaning system that is utilized to interpret both the self and the environment (e.g., Kelly, 1955; Pepper, 1942; Whitehead, 1929), Dweck and her colleagues proposed that individuals have “lay theories” about themselves and the social world (e.g., Dweck, Chiu, & Hong, 1995; Dweck & Molden, 2006). These lay theories, also referred to as implicit self-theories, embody an individual’s fundamental assumptions regarding these areas, and alter an individual’s perception of themselves and the world around them (also see Dweck, 1999, for further review). Individuals can hold different theories about different realms, each specific to that particular area (e.g., personality, social relationships). The area in which these ideas have been applied most extensively is that of an individual’s implicit self-theory of intelligence (or intelligence mindset).

Intelligence mindset refers to how one views the concept of intelligence, and as Dweck and colleagues have demonstrated (e.g., Bandura & Dweck, 1985, as cited in Dweck, 1999; Dweck & Leggett, 1988), individuals typically endorse one of two viewpoints, or mindsets. The first is that intelligence is a fixed characteristic or trait, such that an individual has a particular amount of intelligence, which is generally unchangeable. This viewpoint is referred to as an entity mindset, as in intelligence is a static entity which exists within individuals and
that we are powerless to change. The alternative is that intelligence is malleable, and can be increased via learning during the life span. This viewpoint is deemed an incremental mindset, in that intelligence is seen as an incremental characteristic that can be increased and enhanced through effort. These two viewpoints form the endpoints of a continuum, with any given individual’s mindset of intelligence falling along this dimension. Over the past thirty years, research has demonstrated that an individual’s mindset has quite a significant impact on many areas of his or her intellectual and academic functioning. What follows is a review of these areas.

Response to Challenge

Translating research regarding learned helplessness in animals (Seligman & Maier, 1967) to human students, Dweck and colleagues found evidence for two types of reactions to academic failure (e.g., Diener & Dweck, 1978, 1980). One type was deemed a helpless reaction pattern, typified by students’ self-blame regarding their intelligence (e.g., “I must not be very smart”), a reduction in their predicted self-efficacy regarding academic problems (even if they had previously proved to be successful at the same problems), a tendency to underestimate their prior successes, an increase in negative emotion, and a loss of motivation for academic problems immediately following their failure, even if those problems were of a difficulty that the students had previously demonstrated success in solving. The second type, referred to as a mastery-oriented response pattern, showed very different responses to failure. This response pattern was typified by an absence of blame for the failures, an increase in academic effort, no change in self-confidence in academic areas, accurate memory for previous successes, and no
increase in negative emotions. Over the course of these studies, Dweck and colleagues demonstrated that roughly equal numbers of children demonstrated each response pattern, with approximately 15% of them showing no clear belongingness to either group, that mastery-oriented children generally outperformed those showing the helpless response pattern on novel, challenging academic tasks, and that IQ had no relationship to these response patterns (Dweck, 1999).

Licht and Dweck (1984) showed that fifth-grade children demonstrating the helpless response pattern performed significantly worse than those demonstrating the mastery-oriented response pattern on comprehending new academic material in the classroom when the material was intentionally presented in a confusing manner. The authors argued that since schooling involves progressively harder academic material, some of which is likely to be confusing to most students at some point, that a student’s response pattern, independent of actual intelligence, is likely to have profound effects for his or her academic achievement.

**Achievement Goals**

Students have been shown to emphasize different goals in academic achievement contexts (Dweck & Elliott, 1983; Elliott & Dweck, 1988). One type of goal is referred to as a performance goal. Students employing performance goals are primarily concerned with appearing intelligent and competent (to themselves as well as to others), and avoiding negative judgments of their work. The other type is referred to as a learning goal, and the primary motivation is for students to increase their competence in a certain subject area or task. Research has found that, when forced to choose, roughly equal numbers of students choose
either performance or learning goals when faced with a task (e.g., Dweck & Leggett, 1988). This research has found that when students engaged in performance goals encounter failure, they are more likely to exhibit helpless response patterns. Conversely, those engaged in learning goals are more likely to exhibit mastery-oriented response patterns. Furthermore, those engaged in learning goals tend to do better on novel learning tasks in real-life classrooms (Grant & Dweck, 2003; Farrell & Dweck, 1985, as cited in Dweck, 1999). Perhaps most importantly for this study, Elliott and Dweck (1988) showed how students could be induced to engage in either performance or learning goals, and employing these goals influenced their response patterns and performance in the aforementioned manners. Subsequent research has found that utilizing learning goals appears to be associated with more effective work and study strategies, and more effective use of newly-learned material (Ames & Archer, 1988; Dweck, 1999; Pintrich & Garcia, 1991).

The Effect of Intelligence Mindset on Achievement Goals

Studies have shown that students possessing an incremental mindset towards intelligence are significantly more likely than those possessing an entity mindset to pursue learning goals in academic settings. Presenting middle school students with a choice of academic tasks, Dweck and Leggett (1988) found that over 80% of students endorsing an entity mindset choose tasks associated with performance goals, such as those that were explicitly described as easy enough that the students would not make mistakes. By comparison, over 60% of the students endorsing an incremental mindset chose to engage in a task that highlighted a learning goal, being described as something that was difficult and new, but that offered the
opportunity to learn new skills. In another study, college students in Hong Kong who had done poorly on an English examination were asked how likely they were to enroll in a remedial English course that had been shown to be effective in improving English proficiency (Hong, Chiu, Dweck, Lin, & Wan, 1999). The researchers argued that enrollment in this course represented a learning goal, as it would be difficult but promote new skills for those shown to be struggling with the English language. Students endorsing an entity intelligence mindset were significantly less likely to report interest in the course than those endorsing an incremental mindset.

This link between intelligence mindset and academic goals has also been demonstrated in college students (Robins & Pals, 2002). Incoming college freshman were assessed for their intelligence mindset, and followed over the four-year college period. Those reporting an entity mindset were more likely to report pursuing performance goals during their time at college, while those reporting an incremental mindset were more likely to report pursuing learning goals. Additionally, entity theorists reported lower self-esteem upon entering college as compared to incremental theorists, and the change in their self-esteem over the four years was significantly more negative than that of the incremental theorists.

Experimental induction of either an entity or incremental intelligence mindset has also been shown to predict students’ choices of learning versus performance goals in academic tasks, supporting a causal link between intelligence mindset and academic goals (e.g., Dweck & Leggett, 1988; for further review, see below).

In sum, it appears that intelligence mindset is associated with the type of achievement goals pursued in academic settings, and that this link appears to be causal. An entity
intelligence mindset is more likely to produce performance goals, while an incremental mindset is more likely to produce learning goals. The type of goals one is oriented towards appears to be associated with the type of response one demonstrates when faced with challenging tasks and/or failure in academic settings. Individuals employing performance goals are more likely to demonstrate a helpless response pattern, typified by poorer behavioral and emotional outcomes, while those employing learning goals are more likely to demonstrate a mastery-oriented response pattern, typified by much more adaptive behaviors. Given the likelihood of challenging material occurring at some point during a student’s education, those possessing an entity intelligence mindset appear to be at a significant disadvantage in terms of likely academic achievement, as opposed to those possessing an incremental mindset.

Why might the theory of intelligence one possesses have such effects on one’s choice of academic goals? It has been argued that possessing an entity mindset produces concern regarding challenging academic material because failure suggests something deficient about one’s intelligence, and if intelligence is unchangeable, highlights a permanent flaw in the self, leading to the aforementioned helpless response (Dweck, 1999). This concern leads individuals possessing an entity mindset to seek out easier material, motivated by performance goals focused on demonstrating one’s ability to the self and others and avoiding failure. However, those with an incremental mindset see challenging material, and failure itself, as a sign that there is more to be learned about the task or topic, eliciting learning goals intended to increase one’s competency in the area and, more generally, intelligence. This view is supported by the finding, using event-related potentials, that incremental theorists demonstrated more memory-related activity in the left-temporal region of the brain to corrective information during
performance feedback following a test of general knowledge than did entity theorists, and that entity theorists demonstrated greater activity in brain areas associated with evaluative concerns when presented with negative feedback (Mangels, Butterfield, Lamb, Good, & Dweck, 2006).

**Longitudinal Studies of Academic Achievement**

This link between intelligence mindset and academic achievement has been demonstrated in multiple longitudinal studies. In one, 373 students entering the seventh grade over a four-year period were assessed for their intelligence mindset (Blackwell, Trzesniewski, & Dweck, 2007). Those who reported a belief in the malleable nature of intelligence (incremental mindset) experienced a significant improvement in mathematics grades over the course of their seventh and eighth grade academic years, while those who reported a belief in the fixed nature of intelligence (entity mindset) showed no improvement in mathematics grades, instead showing a flat trajectory over the two years. Also, the entity mindset students had significantly worse mathematics grades by the end of eighth grade than those of the incremental mindset students. In another study, students entering seventh grade were assessed for their intelligence mindset and had their grades during the following academic year tracked (Henderson & Dweck, 1990). Students who achieved poorly during sixth grade continued to achieve poorly. However, of those who achieved well in sixth grade, those with an entity intelligence mindset saw their class standing decline during seventh grade, while those who held an incremental mindset maintained their class standing. That is, those with an entity mindset began to do worse academically relative to their peers. The authors argued that prior to the middle-school/junior high years, challenging academic material is relatively minimized and
failure less likely, but during middle school or junior high, the material tends to increase in difficulty substantially, accounting for the general lack of difference found between entity and incremental theorists in sixth grade. This argument could also account for the students in the Blackwell et al. (2007) study showing no difference in math grades in sixth grade as a function of intelligence mindset. Since the type of theory of intelligence a student possesses affects their academic goal orientation, and these goal orientations (performance vs. learning) only demonstrate differential response patterns in the face of challenge or failure, the achievement differences between those holding entity vs. incremental theories of intelligence only appear in the face of difficulty (Dweck, 1999).

**Alterning Intelligence Mindset Via Interventions**

As mentioned above, induction of either theory of intelligence in participants has occurred in experimental studies. Dweck and Leggett (1988) presented fifth-grade students with passages about historical figures featuring descriptions of these individuals’ accomplishments. In the entity version of the passage, these accomplishments were attributed to the individuals’ innate and fixed intelligence, while in the incremental version the figures’ accomplishments were attributed to the intelligence they acquired during their lifespan. In a subsequent task, those presented with the incremental version of the passage were more likely to choose learning goals than those presented with the entity version. Similarly, university students in Hong Kong who did poorly on an English proficiency exam were given a passage which cited research evidence either describing the fixed, unchangeable, and innate nature of intelligence or the viewpoint that intelligence was malleable and could be increased during life
via learning and experience (Hong et al., 1999). Those given the passage supporting an incremental intelligence mindset were more likely to agree to engage in a remedial tutorial on the English language offered following the passage reading.

While these two studies looked at outcomes occurring immediately following the experimental manipulation, two studies have developed interventions that produced more long-term change in academic achievement. In one, college students were assigned to either an experimental condition who participated in an attitude change intervention designed to increase their belief in the malleable nature of intelligence, or to one of two control conditions (Aronson, Fried, & Good, 2002). Experimental participants were asked to write a letter to a middle school child who was said to be struggling academically. In writing this letter they were asked to be encouraging and, most importantly, stress what recent research had revealed regarding intelligence, namely that it is expandable and can increase with hard work. This task utilized the “saying-is-believing effect” (Higgins & Rholes, 1978), a method of fostering attitude change by having individuals advocate for a particular position in their own words. Participants were also shown a video that highlighted the brain’s development of new neural connections in response to intellectually challenging material. These participants were asked to include in the letter examples from their own lives that illustrated their argument in favor of malleable intelligence, as previous research had demonstrated that asking people to consider how their own past behavior is consistent with an attitude tends to strengthen that attitude (Fazio, 1995). Participants were then assessed at the end of the academic year, approximately nine weeks post-intervention. After controlling for the students’ prior SAT scores, participants in the experimental condition were found to have significantly higher grade-point averages at
the end of the academic year than did those in the control conditions (approximately one-fifth of a point higher).

In the second study, seventh-grade students had their intelligence mindset assessed and then underwent an eight-session intervention (Blackwell et al., 2007). They were told that this intervention would teach them about the brain and give them instruction which could help them with their study skills. Both the experimental and control conditions were given information regarding the brain’s structure and function, as well as study skills. While the control condition was given information regarding memory and mnemonic devices, the experimental condition was presented with evidence for the incremental theory of intelligence and engaged in activities highlighting the neuroplasticity of the brain during learning. Following the completion of the eight sessions, participants in the experimental condition showed a significant increase in their endorsement of the incremental mindset, while those in the control condition did not. Also, a significantly higher percentage of students in the experimental condition, compared to controls, were reported by their teachers to have demonstrated an increase in classroom motivation. Finally, students in the experimental condition were found to have a more positive growth curve trajectory in their mathematics grades from pre-intervention to the end of the academic year.

Extending Mindset into Other Realms

In recent years, the concept of mindset has been increasingly applied to areas outside of intelligence. These additional areas include affect, physical attributes, relationships, personality, and shyness.
Affect

It has been demonstrated that individuals vary in the degree to which they view emotional experience as fixed vs. malleable (Tamir, John, Srivastava, & Gross, 2007). The impact of this emotion mindset was investigated in participants undergoing the transition to college from high school. It was found that students who endorsed entity beliefs about emotion rated their self-efficacy in emotion regulation lower than did those who endorsed incremental beliefs. Additionally, students who endorsed entity beliefs regarding emotion experienced fewer positive emotional experiences and received decreasing levels of peer social support during the first few months of college. At the end of their first year of college, those with an entity emotion mindset had lower self- and peer-reported levels of well-being and social adjustment, and higher levels of depression symptoms than did those with an incremental emotion mindset. Finally, emotion regulation self-efficacy partially mediated the relationship between emotion mindset and both well-being and depression symptoms. Those students with higher levels of emotion regulation self-efficacy evidenced a weaker relationship between emotion mindset and those negative emotional outcomes; that is, higher self-efficacy in emotion regulation buffered students against the negative effects of entity emotion mindset on emotional functioning.

In a series of eight studies, Stenstrom (2008) found that participants possessing an entity theory of anger reported greater anger and hostility after being provoked (either via imagined vignettes or staged, real-world interactions), a greater amount of planning for revenge, and more physical and verbal aggression towards those who provoked them, as compared to those
possessing an incremental theory. However, inducing an entity mindset of anger failed to produce increases in aggression.

Physical Attributes

Kasimatis, Miller, and Marcussen (1996) presented participants with information that described athletic coordination as either genetically determined (an entity theory) or as mostly learned (incremental theory). Participants were then asked to engage in a novel exercise task that was presented as undergoing testing for its effectiveness. The task began as a relatively easy one before becoming more difficult and presenting a challenge to participants. Participants induced with an entity theory of athletic coordination reported less motivation during the task, lower levels of self-efficacy regarding the demands of the task, and higher levels of negative affect following the challenging segment.

A second study in this realm assessed the mindset of young adolescents towards athletic ability (Ommundsen, 2003). Those who endorsed an incremental mindset of athletic ability were more likely, according to self-report, to put forth higher levels of effort, to plan and monitor their efforts, and to seek assistance in training/performing in physical education classes.

Lastly, the concept of mindset has been applied to body weight and dieting (Burnette, 2010). Results indicated that an entity mindset of body weight (i.e., approximate body weight is determined genetically and varies little in light of efforts to alter it) significantly predicted increases in avoidant coping weight behaviors following weight loss setbacks, and that this relationship was mediated by expectations of success in dieting. These results were found both
in a cross-sectional sample asked to imagine the setback, and in a longitudinal sample of actual dieters who experienced true setbacks. Additionally, experimental manipulation of the body weight mindset of another sample of participants demonstrated that an incremental body weight mindset significantly predicted greater endorsement of persistence behaviors in light of an imagined dieting setback; again this relationship was significantly mediated by dieting success expectations.

**Relationships**

Four studies have investigated the role of mindset in interpersonal relationships, both peer- and romantic-oriented. In one, college students were assessed for their mindset towards romantic relationships and then followed over the course of six months (Knee, 1998). Individuals with an entity relationship mindset (i.e., belief in romantic destiny) had a stronger relationship between their initial satisfaction in relationships and the longevity of relationships, demonstrating less tolerance of early relationship difficulties than for those with an incremental relationship mindset (i.e., relationships grow and strengthen with time and effort). In the face of relationship stressors, individuals with an entity mindset were more likely to employ avoidance coping strategies, while individuals with an incremental mindset were more likely to employ relationship-maintaining coping strategies. Additionally, those holding an incremental mindset endorsed more long-term approaches to dating.

The relationship between the belief that one’s partner is ideal and relationship satisfaction has been found to be stronger for individual’s induced with an entity mindset of romantic relationships (Franiuk, Pomerantz, & Cohen, 2004). When the relationships of these
individuals were challenged via negative feedback from the researchers, those induced with an entity mindset reacted with more relationship-enhancing cognitions if they were confident they were with the right person, and more relationship-detracting cognitions if they did not. This threat to the relationship had no effect on processing of the relationship for those individuals induced with an incremental mindset.

Finkel, Burnette, and Scissors (2007) found that an entity mindset of romantic relationships predicted reduced forgiveness for imagined transgressions by a romantic partner. In a second study, participants were followed for six months, reporting every two weeks on actual transgressions by their romantic partner and their degree of forgiveness for such. Consistent with study one, an entity mindset predicted less forgiveness.

Finally, Rudolph (2009) examined whether children’s peer relationship mindset had implications for their social goal orientation and their self-appraisals in the context of peer relationships, particularly peer disapproval. Those holding an entity mindset of relationships (i.e., friendships are meant to be) were more likely to endorse performance-oriented social goals, and less likely to endorse mastery-oriented social goals. An entity mindset was also associated with higher reports of depression symptoms. This increased experience of depression symptoms was particularly elevated following peer victimization. Entity theorists also reported more negative self-appraisals of peers’ views of them following disapproval from peers.
Personality

In one of the earliest studies to take the literature on intelligence mindset and apply it to another domain, Erdley, Cain, Loomis, Duman-Hines, and Dweck (1997) investigated the influence of mindset on children’s social behavior. Children were experimentally focused on either performance or learning goals and then engaged in a social task that ended in failure. Those children prompted to approach the task with a focus on performance goals reacted to their failure with greater levels of helpless and defensive behaviors. Alternatively, children prompted to approach the task with a focus on learning goals reacted to the social failure with greater persistence and increased attempts to master the task. In a second study, children were asked to self-report their personality mindset. Children endorsing higher levels of entity beliefs regarding personality were more likely to endorse performance goals in social situations, particularly when those goals involved minimization of risk and the avoidance of challenge.

Kammrath and Dweck (2006) found that individuals’ personality mindset predicted their behavior following a romantic relationship transgression. Participants who viewed personality as changing and improving over time were more likely, compared to those who viewed personality as fixed and unchanging, to openly and constructively discuss their displeasure during relationship conflicts. This difference appeared both in retrospective accounts of past incidents in dating relationships and prospectively during a two-week period in which any conflicts were reported on a daily basis. During this second phase, the severity of the conflict was assessed and found to moderate the relationship between relationship mindset and response pattern; the more severe the conflict, the more pronounced was the difference between entity- and incremental-minded participants.
Adolescents’ higher levels of entity personality mindset has been found to predict stronger desires for revenge following both hypothetical and recalled peer conflicts (Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011). When these adolescents were induced with an incremental personality mindset, the result was a decrease in the desire for revenge.

Shyness

Most relevant to the current study, the concept of mindset has also been extended to the realm of shyness. Citing research indicating that individual differences in shyness have not been shown to sufficiently explain individual differences in shy people’s social behavior and motivations, Beer (2002) proposed that a shyness mindset may be useful in accounting for such differences. Among shy individuals, those with an incremental shyness mindset were more likely to report a preference for learning goals in a future social situation, endorsing a desire to seek out situations in which they could develop greater mastery of their social skills. Additionally, incremental theorists had higher scores on a composite of general and social approach tendencies, indicating that they were more oriented towards potential rewards than those with an entity shyness mindset. Those with an entity mindset reported using more avoidant strategies in social situations. Beer also demonstrated that the shyness mindset construct provided incremental validity over personality mindset generally.

Further, an actual social interaction was facilitated, which included observer reports of participants’ behavior. Among shy individuals, observers judged those with an entity mindset as more avoidant in the social interaction, as having lower social skills, and as being less likable.
Across the three studies reported by Beer, the correlation between the measures of shyness and shyness mindset ranged from $r = .25$ to $r = .31$, indicating some overlap of the constructs, but also suggesting strong differences, providing indirect evidence for the incremental validity of shyness mindset above and beyond shyness itself.

Zhao (2006) further explored shyness mindset in a sample of 9- to 12-year-old children. Shyness mindset was unrelated to children’s reports of how often they experienced negative emotions such as anger, shame, sadness, or embarrassment. Also, children with an incremental shyness mindset were not found to be more motivated to change their shyness (i.e., they did not endorse a preference for social learning goals). However, unlike the Beer study, results were not presented specifically for participants who were shy. The lack of significant findings may be due to the presence of non-shy individuals in the analyses, which would presumably weaken any relationship found between shyness mindset and both negative affect and motivation to change shyness.

Further examining shyness mindset in children, Markovic (2010) investigated the moderating role of shyness mindset on the relationship between shyness and coping strategies. In this study, measures of shyness mindset and personality mindset were combined for the analyses, unfortunately preventing exploration of the specific role of shyness mindset in the author’s model. A positive relationship between shyness and internalizing coping strategies was demonstrated, which was greater for children endorsing an entity personality mindset than for those endorsing an incremental mindset.

The effects of shyness mindset on the college transition were explored by Valentiner et al. (2011). Incoming college freshman were assessed at the start of the academic year and again
seven months later. Lower levels of shyness mindset at Time 1 were associated with decreases in social performance anxiety symptoms from Time 1 to Time 2, though not with any change in social interaction anxiety. This relationship was found to be partially mediated by college belongingness; higher levels of college belongingness were associated with a decrease in the shyness mindset/performance anxiety relationship.

This investigation of shyness mindset was then extended to include a clinical sample of individuals undergoing exposure therapy for anxiety disorders (Valentiner et al., 2013). Participants who reported higher levels of an incremental shyness mindset demonstrated greater reduction in social performance anxiety symptoms over the course of treatment than those who reported more of an entity mindset. Consistent with Valentiner et al. (2011), there was no difference in reduction of social interaction anxiety symptoms as a function of shyness mindset after controlling for social performance anxiety symptoms. The authors speculate that promoting a greater incremental shyness mindset may increase the effectiveness of treatment for individuals with anxiety disorders.

An attempt to promote an incremental view of shyness was then put forth using a college student sample. Drawing from previous work on interventions promoting an incremental mindset of intelligence, particularly that developed by Aronson et al. (2002), an intervention was developed which included information on research that showed how shyness changes over the lifespan, how symptoms of social anxiety can be lessened through experience, the neuroplasticity of the brain following experience and treatment, examples of historical figures who overcame shyness, and the “saying-is-believing” paradigm (Jarek & Valentiner, 2012). Individuals presented with this intervention showed a drop of nearly two standard
deviations, relative to the full-sample distribution, in shyness mindset scores. A control condition showed no significant differences pre- to post-intervention. At one-week follow-up, scores in the experimental condition rebounded roughly 30%, but were still significantly lower than at pre-intervention. Interestingly, a marginally-significant difference was found for self-esteem scores post-intervention, such that experimental participants reported higher self-esteem than did controls. However, this difference was non-significant at follow-up.

Summary

The importance of mindset as developed in the intelligence literature, and its effects on responses to challenge, goal orientation, and outcomes, appears to be readily translatable to a variety of additional realms. Most importantly for the current study, shyness mindset appears to be a construct that provides valuable information above and beyond shyness itself, affects response patterns to social challenge, influences social goals and strategies, impacts the course of and treatment for social performance anxiety, and is amenable to change.
CHAPTER 2
CURRENT STUDY RATIONALE

The current study aimed to integrate and extend the findings of Valentiner et al. (2013) and Jarek and Valentiner (2012). Higher levels of an entity shyness mindset have been found to be associated with a less successful course of treatment in the case of social performance anxiety. This finding appears consistent with the greater mindset literature, in which an entity mindset is associated with the preference for performance goals; in social anxiety, this phenomenon likely manifests in an avoidance of challenging or novel social situations, so as to avoid failure. This avoidance then contributes to the maintenance of social anxiety symptoms. This process is in contrast to the utilization of learning goals, which would likely be more successful in challenging social anxiety. As individuals employ learning goals and work to develop better social skills and competence, they are more likely to willingly enter challenging situations, habituating to their anxiety and disconfirming their catastrophic predictions (e.g., via exposure). Performance goals have in turn been shown in the mindset literature to lead to a helpless response pattern in the face of failure, such as the social failure those with social anxiety frequently experience. These helpless response patterns are associated with poorer outcomes. Much like the mindset explored in multiple other domains, shyness mindset also appears malleable, at least in the short term. Therefore, if individuals could be induced to hold a more incremental shyness mindset early in the course of treatment for their social performance anxiety, it is feasible that such a change in mindset could improve their
engagement with and response to treatment during this time, and ultimately reduce their social performance anxiety symptoms to a greater degree. It would likely produce this improvement by encouraging a greater emphasis on learning goals during treatment, leaving individuals more open to challenging their anxiety and developing new social skills. This learning goal orientation would likely then lead to an increased prevalence of mastery-oriented response patterns in the face of social challenge, such as the challenge present when working to overcome highly entrenched social avoidance patterns and facing feared situations, and also lead to a decrease in maladaptive behaviors and emotions (e.g., depressive reactions, memory bias for social failures).

Pilot Testing

To this end, pilot testing was undertaken at the Obsessive-Compulsive Disorder (OCD)/Anxiety program at the Alexian Brothers Behavioral Health Hospital (ABBHH). The intervention protocol developed by Jarek and Valentiner (2012) was used, and modifications to make it more applicable to adults of all ages were made and tested during the course of this pilot work. The purpose of this pilot testing was to adapt this protocol and provide preliminary evidence for its effectiveness in altering mindset in a clinical population. Nine adult individuals undergoing treatment for SAD served as pilot participants. Using Beer’s (2002) measure of shyness mindset (which is on a 6-30 scale, higher scores indicating a greater entity shyness mindset), scores decreased from a pre-intervention mean of 18.78 ($SD = 4.84$) to a post-intervention mean of 12.22 ($SD = 1.64$), a decrease of 1.35 standard deviations. At one-week follow-up ($n = 8$), this reduction still held ($M = 12.29$, $SD = 4.72$). Therefore, preliminary
evidence indicated that shyness mindset could be altered in a clinical population of socially anxious individuals.

Predictions

First, it was hypothesized that experimental participants who received the shyness mindset protocol would demonstrate a greater decrease in shyness mindset, from pre-intervention to post-intervention, than a control condition of individuals who received treatment-as-usual (TAU). This comparison is consistent with other attempts at altering mindset in the literature, most applicably Jarek and Valentiner (2012). Second, considering the results of Valentiner et al. (2013) within the larger context of the mindset literature, it was predicted that the experimental condition would have a greater decrease in social performance anxiety symptoms from pre-intervention to both a one-week follow-up and the end of treatment. Third, it was predicted that post-intervention shyness mindset would mediate the effect of the intervention on social performance anxiety symptoms.

Fourth, it was predicted that social phobia safety behaviors at one-week follow-up would mediate the relationship between post-intervention shyness mindset and social performance anxiety symptoms (at both one-week follow-up and end of treatment). As argued above, a reduction in shyness mindset likely produces a decrease in orientation towards performance goals in social situations (including exposures), and therefore a reduction in the desire to hide failure and/or difficulties from the self and others (i.e., safety behaviors). Given the impact of reducing or eliminating safety behaviors during exposure treatment for social anxiety (Clark & Wells, 1995; Wells et al., 1995), such a reduction should facilitate greater
effectiveness of treatment and a subsequently greater reduction of social performance anxiety symptoms.

Fifth, it was predicted that post-intervention treatment outcome optimism would mediate the relationship between post-intervention shyness mindset and social performance anxiety symptoms (again at both one-week follow-up and end of treatment). Given the established evidence for the positive effect of favorable expectations on therapeutic outcomes (e.g., Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011; Greenberg, Constantino, & Bruce, 2006), an optimistic viewpoint towards treatment is likely to aid in symptom reduction over the course of treatment. Reducing the entity shyness mindset of individuals will likely provide an increase in such optimism, as participants are encouraged to view shyness as changeable and not a trait that is destined to produce difficulty for them in their functioning.

Sixth and lastly, given the finding for self-esteem in Jarek and Valentiner (2012), it was predicted that the experimental condition would have a greater increase in social self-esteem from pre-intervention to both one-week follow-up and the end of treatment.
Participants were 39 patients who enrolled in either the partial hospitalization program or intensive outpatient program (PHP or IOP) in the OCD/Anxiety treatment program at ABBHH in Hoffman Estates, Illinois. Twenty-six participants completed all data collection time points, and are considered study completers for the purpose of this study. Table 1 includes demographic information (e.g., age, marital status) and treatment variables (i.e., PHP or IOP enrollment and current medication use) for participants in both the experimental and control conditions, presented both for all total participants and for study completers only. No power analyses were conducted in planning for the number of participants in this study; rather, as many participants as possible were included in the time frame for data collection. Given the observed patient census of ABBHH over the two years preceding this study, as well as the rate of individuals within that census meeting this study’s eligibility criteria (see procedure below for more information), it was expected that roughly one patient per week would be eligible to participate in the current study. This estimate proved roughly accurate during the course of recruitment and data collection. See procedure section below for additional participant sample information.
Table 1

Demographic and Treatment Variables, for Both All Participants and Study Completers Only, Further Separated by Condition

<table>
<thead>
<tr>
<th>Demographic/Treatment Variable</th>
<th>All participants</th>
<th></th>
<th></th>
<th>Study completers only</th>
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<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
<td>Total</td>
<td>Experimental</td>
<td>Control</td>
<td>Total</td>
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<tr>
<td></td>
<td>(n = 20)</td>
<td>(n = 18)</td>
<td>(n = 38)</td>
<td>(n = 13)</td>
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<tr>
<td>Age – M (SD)</td>
<td>29.92 (11.20)</td>
<td>26.62 (10.13)</td>
<td>28.40 (10.70)</td>
<td>32.96 (12.33)</td>
<td>25.80 (7.71)</td>
<td>29.53 (10.80)</td>
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<tr>
<td>Gender – No. (%)</td>
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<tr>
<td>Female</td>
<td>11 (55%)</td>
<td>9 (50%)</td>
<td>20 (53%)</td>
<td>9 (69%)</td>
<td>6 (46%)</td>
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<td>Male</td>
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<td>9 (50%)</td>
<td>18 (47%)</td>
<td>4 (31%)</td>
<td>7 (54%)</td>
<td>11 (42%)</td>
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<td></td>
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<td>Caucasian</td>
<td>18 (90%)</td>
<td>15 (83%)</td>
<td>33 (87%)</td>
<td>12 (92%)</td>
<td>10 (77%)</td>
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<td>2 (8%)</td>
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<td>3 (8%)</td>
<td>1 (8%)</td>
<td>1 (8%)</td>
<td>2 (8%)</td>
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<tr>
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<td>2 (10%)</td>
<td>1 (6%)</td>
<td>3 (8%)</td>
<td>1 (8%)</td>
<td>1 (8%)</td>
<td>2 (8%)</td>
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<td>No</td>
<td>18 (90%)</td>
<td>17 (94%)</td>
<td>35 (92%)</td>
<td>12 (92%)</td>
<td>12 (92%)</td>
<td>24 (92%)</td>
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<td>Never Married</td>
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<td>13 (71%)</td>
<td>26 (68%)</td>
<td>7 (54%)</td>
<td>9 (69%)</td>
<td>16 (62%)</td>
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<td>1 (6%)</td>
<td>2 (5%)</td>
<td>2 (15%)</td>
<td>2 (15%)</td>
<td>4 (15%)</td>
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<td>2 (11%)</td>
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<td>1 (6%)</td>
<td>5 (12%)</td>
<td>3 (23%)</td>
<td>1 (8%)</td>
<td>4 (15%)</td>
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(continued on following page)
Table 1 (continued)

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<td>$60,001 - $65,000</td>
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<td>&gt; $65,000</td>
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Current Medication Use – No. (%)  
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<td>PHP/IOP – No. (%)</td>
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<td>16 (80%)</td>
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<td></td>
<td>17 (89%)</td>
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<td></td>
<td>33 (85%)</td>
<td>6 (15%)</td>
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</table>

Note. One participant assigned to the control condition provided screening data, but withdrew from treatment prior to completing the demographic questionnaire. This explains the disparity between the report of 18 control participants, and 38 total participants, in this table, and the report of 19 and 39, respectively, in other references in this document to the sample of the current study. Percentages are rounded to the nearest whole number; as such some rounding error may be evident. Current medication use refers to reports of active psychotropic medication use at time of enrollment into study. PHP = partial hospitalization program; IOP = intensive outpatient program.
Measures

Social Interaction Anxiety Scale – Short Form

The Social Interaction Anxiety Scale – Short Form (SIAS-SF; Fergus, Valentiner, McGrath, Gier-Lonsway, & Kim, 2012) is a 6-item short-form version of the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998), a measure of social interaction anxiety. As with the SPS, the original SIAS has been used extensively in research studies with both clinical and non-clinical populations, and has demonstrated strong psychometric properties, including internal consistency ($\alpha$s from .88 to .94; Mattick & Clarke, 1998), convergence with other measures of social anxiety ($r$s from .30 to .74; Mattick & Clarke, 1998), as well as the ability to discriminate between those diagnosed with SAD and controls (e.g., Peters, 2000). The SIAS-SF makes two improvements upon the SIAS: 1) scale length, as the original SIAS is a 20-item measure, and 2) readability, as a main focus of its development was to create a measure that required a lower reading level while maintaining the strong psychometric properties of the original SIAS (for further information, see also Fergus, Valentiner, Kim, and McGrath, in press, and Le Blanc et al., 2014). The SIAS-SF is highly correlated with the SIAS ($r$s = .93 and .94 in two samples), has demonstrated adequate internal consistency ($\alpha$s = .80 and .88), and has shown convergence with other measures of social anxiety (Fergus et al., 2012). The six-items of the short form (e.g., “I am tense mixing in a group”) are rated on a 5-point scale from not at all to extremely; higher scores are indicative of greater social interaction anxiety.
Implicit Self-Theories of Shyness Scale

The Implicit Self-Theories of Shyness Scale (ISTSS; Beer, 2002) is a six-item scale that assesses an individual’s implicit self-theory of shyness. Three of the items were modified by Beer from Erdley and Dweck’s (1993) measure of implicit self-theories of intelligence (e.g., “I have a certain level of shyness, and it is something that I can’t do much about”). These three items are keyed toward an entity theory of shyness. Beer also added three items, keyed towards an incremental theory of shyness (e.g., “I can changes aspects of my shyness if I want to”), to balance the scale; these items are reverse-scored. Each item is rated on a 5-point scale, from disagree strongly to agree strongly. Higher scores on the measure reflect a greater entity shyness mindset. The scale has previously demonstrated an acceptable level of internal consistency ($\alpha = .75$; Beer, 2002).

Social Phobia Scale – Short Form

The Social Phobia Scale – Short Form (SPS-SF; Fergus et al., 2012) is a 6-item short-form version of the Social Phobia Scale (SPS; Mattick & Clarke, 1998), a measure of social performance anxiety. The original SPS has been used extensively in research studies with both clinical and non-clinical populations, and has demonstrated strong psychometric properties, including internal consistency ($\alpha$s from .89 to .94; Mattick & Clarke, 1998), convergence with other measures of social anxiety ($r$s from .54 to .69; Mattick & Clarke, 1998), and the ability to discriminate between those diagnosed with SAD and controls (e.g., Peters, 2000). The improvements of the SPS-SF over the SPS are the same as described for the SIAS-SF above (for further information, see also Fergus et al., in press, and Le Blanc et al., 2014). The SPS-SF
is highly correlated with the SPS ($rs = .91$ and .94 in two samples), has demonstrated adequate internal consistency ($\alpha s = .77$ and .83), and has shown convergence with other measures of social anxiety (Fergus et al., 2012). The six-items of the short form (e.g., “I get nervous that people are staring at me as I walk down the street”) are rated on a 5-point scale from not at all to extremely; higher scores are indicative of greater social performance anxiety.

**Outcome Optimism Scale**

The Outcome Optimism Scale (OOS; Dumka, Sprenkle, & Martin, 1995) is a 4-item scale that measures an individual’s expectation of positive change during psychotherapy. The items are rated on a 7-point scale, three from disagree strongly to agree strongly (e.g., “I think therapy will help me handle the problem much better”), and one from the same to much better (“compared to when therapy began, I think the problem at the end of therapy will be:”). Higher total scores indicate greater outcome optimism. The scale has demonstrated adequate internal consistency ($\alpha = .81$; Dumka et al., 1995). The scale has been found to be unrelated to generalized, trait-like optimism, while being significantly associated with working alliance ($r = .57$) and perceived progress in therapy ($rs$ ranging from .36 to .53; Dumka et al., 1995).

**Social Phobia Safety Behaviours Scale**

The Social Phobia Safety Behaviours Scale (SPSBS; Pinto-Gouveia, Cunha, & Salvador, 2003) is designed to measure the use of safety behaviors by socially anxious individuals in social situations (e.g., “getting a seat as hidden as you can”). Items are rated on a 4-point scale from never to usually; higher scores indicate greater use of safety behaviors. The
SPSBS has shown adequate internal consistency ($\alpha$ from .82 to .90) and has demonstrated moderate correlations with other measures of social avoidance and fear of negative evaluation (Gier-Lonsway, Valentiner, & McGrath, 2012; Pinto-Gouveia et al., 2003). In the current study, only the 10-item “laying low” component (SPSBS-LL) was utilized. This component specifically assesses safety behaviors that produce physical, mental, or emotional distance intended to minimize the likelihood of unwanted social attention (Gier-Lonsway et al., 2012). The SPSBS-LL has been found to be strongly correlated with other measures of safety behaviors and constructs theoretically related to social anxiety, and has shown stronger correlations with measures of social anxiety than does the SPSBS’s other component, “putting on” (Gier-Lonsway et al., 2012).

The Texas Social Behavior Inventory

The Texas Social Behavior Inventory (TSBI; Helmreich & Stapp, 1974) is a 16-item measure of social self-esteem. Items are rated on a 5-point scale from *not at all characteristic of me* to *very much characteristic of me* (e.g., “I would describe myself as self-confident”). Higher scores reflected higher social self-esteem. The TSBI has been used extensively in research studies, and has demonstrated adequate internal consistency (e.g., $\alpha = .85$; De La Ronde & Swann, 1998). It has been shown to possess strong properties of validity and reliability (e.g., Brown & Marshall, 2001; Helmreich & Stapp, 1974).
Procedure

Please see Figure 1 for the Journal Article Reporting Standards (American Psychological Association, 2008) flowchart of participants at each phase of the current study.

Screening

Upon beginning the ABBHH program, all patients 18 years of age and older who were deemed to be without a current psychotic disorder or untreated substance-use disorder were asked whether they were willing to fill out measures to determine their eligibility for the current study. Two patients declined, while 109 patients who provided verbal consent then completed measures of shyness mindset (i.e., the ISTSS) and social interaction anxiety symptoms (i.e., the SIAS-SF). Minimum scores on these measures were established prior to the screening phase to determine which patients would be eligible to participate in the full study. On the ISTSS, a minimum score of 17 was required; this score represented the median on this measure in a previously-collected clinical sample at ABBHH, and as such was considered indicative of an entity shyness mindset. On the SIAS-SF, a minimum score of 10 was required; this score has been established as a cut-off for the optimal sensitivity/specificity of the measure in identifying those with a SAD diagnosis (Fergus et al., 2012). Forty-eight screened individuals met these criteria and had the current study explained to them in full, after which informed consent was acquired for the 39 individuals who chose to participate. As part of this informed consent, participants were required to agree to have social performance anxiety exposures be a part of their treatment at ABBHH. Randomization to condition was primarily
Figure 1: JARS flowchart of study participants. JARS = Journal Article Reporting Standards; Pre = pre-intervention; Post = post-intervention; IW = one-week follow-up; Disc = discharge.
done utilizing a random-number table, and such that that the first participant in each pairing of consecutive participants (i.e., participants 1, 3, 5, etc.) was randomly assigned, with the second member of this pair (i.e., participants 2, 4, 6, etc.) assigned to the opposite condition, in order to fill the conditions equally and control for time effects. However, at one point study administrator error led to the use of alternating condition assignment instead. Once this error was discovered, a return to the previous strategy was made. Ultimately, 20 participants were randomly assigned to the experimental condition, while 19 were assigned to the control condition.

**Pre-Intervention**

Of the 39 participants who agreed to enroll in the study, one control participant left treatment that day; the other 38 completed measures of social performance anxiety symptoms, outcome optimism, social anxiety safety behavior usage, social self-esteem, and demographic items. Per standard ABBHH procedure, patient participants were then assigned to a primary therapist or therapist team. Therapists at ABBHH consisted of a variety of mental health service providers, ranging in training from Master’s student externs to a licensed clinical psychologist. It was necessary at times for participants to see a different therapist on a given day, for reasons such as the absence of the assigned therapist. This substitution of therapists was allowed to vary naturally during the current study.
The 20 experimental condition participants were then presented with the shyness mindset protocol prior to beginning their exposure-based course of treatment (typically this presentation occurred the first or second day of program attendance). The 18 control condition participants received TAU during this time.

The protocol was presented via Articulate Presenter (Articulate Global, Inc., 2009), a program which combines PowerPoint presentations with a voiceover, along with audio and video files. It consisted of six main components: 1) presentation of research evidence suggesting that personality can change over the lifespan; 2) information regarding the brain’s potential for neuroplasticity and thus change; 3) presentation of research evidence for the efficacy of anxiety treatment, particularly exposure therapy; 4) recorded video testimonials of individuals describing their experience of their shyness changing over time; 5) motivational elements (e.g., videos highlighting famous and successful individuals’ prior failures and eventual accomplishments); and 6) a letter writing task utilizing the “saying is believing” paradigm (Higgins & Rholes, 1978).

Following the completion of the shyness mindset protocol, or corresponding TAU, each of the 38 participants completed measures of shyness mindset and outcome optimism. These participants then began their exposure-based course of treatment, in accordance with their exposure hierarchy, collaboratively developed between themselves and their therapist/therapist team. Exposure sessions at ABBHH ranged from two to four hours per day. The content of the
actual exposure sessions varied between participants, and within any given participant’s course of treatment, as a function of their particular, self-identified social performance fears.

Participants sometimes also underwent exposures for other anxiety disorder symptoms (e.g., OCD, generalized anxiety disorder) during their time at ABBHH, depending on their symptom presentation and treatment goals. The focus of exposures on varying symptom presentations was also allowed to vary naturally between and within participants.

**One-Week Follow-Up**

One week after the presentation of the protocol (or corresponding TAU time), three participants (two experimental, one control) had left treatment at ABBHH. The remaining 35 participants completed measures of shyness mindset, social performance anxiety, social anxiety safety behavior usage, and social self-esteem.

**Discharge**

Between one-week follow-up and the discharge time point, four participants (one experimental, three control) unexpectedly withdrew from treatment at ABBHH. Additionally, programmatic error resulted in an additional five participants (four experimental, one control) not being given discharge measures prior to leaving treatment. Each of the remaining 26 participants (13 in each condition) attended on their planned discharge date from the ABBHH program, at which point they again completed measures of shyness mindset, social performance anxiety symptoms, social anxiety safety behavior usage, and social self-esteem. Length of attendance in the ABBHH program for study completers ranged from 10 to 77 days.
Table 2 presents correlations among, and internal consistencies of, each administration of the measures of the current study. Table 3 presents the mean and standard deviation of each measure’s administrations, presented for both all total participants and study completers only, and further separated by condition.

Randomization Check

The two conditions did not significantly differ in terms of PHP/IOP enrollment, $\chi^2 = 0.67, df = 1, p = .41$, age, $t(35) = 0.93, p = .36$, gender, $\chi^2 = 0.10, df = 1, p = .76$, race (Caucasian vs. non-Caucasian), $\chi^2 = 0.37, df = 1, p = .54$, Hispanic origin (Hispanic origin vs. non-Hispanic origin), $\chi^2 = 0.26, df = 1, p = .61$, marital status, $\chi^2 = 2.02, df = 4, p = .73$, household income, $\chi^2 = 5.42, df = 7, p = .61$, current use of psychotropic medication, $\chi^2 = 0.40, df = 1, p = .53$, or day of the week of beginning study participation, $\chi^2 = 2.01, df = 4, p = .74$.

The non-significance of each of these comparisons remained when analyses were limited to those participants correctly randomized, and when analyses were limited to those participants incorrectly randomized (all $ps > .10$).

Additionally, the conditions did not significantly differ in terms of social interaction anxiety symptoms at screening, $t(37) = 1.40, p = .17$, shyness mindset at screening, $t(37) = 0.63, p = .54$, pre-intervention social performance anxiety symptoms, $t(36) = 1.22, p = .23$, pre-
| Measure                                      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    |
|---------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| **Screening Measures**                      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 1. Social Interaction Anxiety               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 2. Shyness Mindset                          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 3. Social Performance Anxiety               | .67   | .35   | .81   |       |       |       |       |       |       |       |       |       |       |       |       |
| 4. Outcome Optimism                         | -.04  | -.06  | .02   | .84   |       |       |       |       |       |       |       |       |       |       |       |
| 5. Safety Behavior Usage                    | .67   | .31   | .63   | .01   | .87   |       |       |       |       |       |       |       |       |       |       |
| 6. Social Self-Esteem                       | -.61  | -.30  | -.60  | .02   | -.71  | .82   |       |       |       |       |       |       |       |       |       |
| **Post-Intervention Measures**              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 7. Shyness Mindset                          | .04   | .34   | .06   | -.10  | .07   | -.03  | .90   |       |       |       |       |       |       |       |       |
| 8. Outcome Optimism                         | .04   | -.14  | .09   | .82   | .13   | -.10  | .41   | .85   |       |       |       |       |       |       |       |
| **One-Week Follow-Up Measures**             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 9. Shyness Mindset                          | .09   | .33   | .09   | -.10  | .27   | -.09  | .80   | -.39  | .84   |       |       |       |       |       |       |
| 10. Social Performance Anxiety              |       | .53   | .39   | .76   | .09   | .65   | -.52  | .32   | .02   | .44   | .83   |       |       |       |       |
| 11. Safety Behavior Usage                   | .40   | .46   | .44   | -.15  | .78   | -.55  | .23   | .09   | .49   | .59   | .81   |       |       |       |       |
| 12. Social Self-Esteem                      | -.47  | -.29  | -.55  | .17   | -.74  | .79   | -.11  | .10   | -.39  | -.59  | -.63  | .82   |       |       |       |       |
| **Discharge Measures**                      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 13. Shyness Mindset                         | -.15  | -.02  | -.21  | -.03  | -.07  | .20   | .58   | -.36  | .72   | .09   | -.05  | -.07  | .90   |       |       |
| 14. Social Performance Anxiety              | -.30  | .43   | .50   | -.24  | .31   | -.36  | .34   | -.32  | .30   | .61   | .36   | -.52  | .32   | .79   |       |
| 15. Safety Behavior Usage                   | -.07  | -.07  | -.02  | -.15  | .31   | -.30  | .15   | -.19  | .35   | .13   | .42   | -.54  | .47   | .52   | .84   |
| 16. Social Self-Esteem                      | -.21  | -.05  | -.41  | .17   | -.54  | .67   | .28   | .04   | .02   | -.26  | -.48  | .65   | -.03  | -.30  | -.60  | .83   |

*Note.* Values in **bold** are p < .05. Correlation coefficients based on pair-wise analyses; *ns* range from 26 to 39. Values in italics and along diagonal are Cronbach’s alphas. Internal consistencies for screening administrations of the measures for social interaction anxiety (Social Interaction Anxiety Scale) and shyness mindset (Implicit Self-Theories of Shyness Scale) are not meaningful due to attenuation of variance, as these measures were used as inclusion criteria to select the sample described here; values were .66 and .49, respectively.
<table>
<thead>
<tr>
<th>Measures</th>
<th>All participants</th>
<th>Study completers only</th>
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<td>Experimental (ns = 13-20)</td>
<td>Control (ns = 13-19)</td>
<td>Total (ns = 26-39)</td>
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<td>12.92 (4.31)</td>
<td>12.69 (4.94)</td>
<td>12.81 (4.54)</td>
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Note. All participants completing discharge measures were by definition study completers. Data at this time point is only presented once to avoid redundancy. *p < .05
intervention outcome optimism, $t(36) = 0.59, p = .56$, pre-intervention social self-esteem, $t(36) = 1.29, p = .21$, or pre-intervention social phobia safety behavior usage, $t(36) = 0.22, p = .83$.

The non-significance of each of these comparisons remained when analyses were limited to those participants correctly randomized, and when analyses were limited to those participants incorrectly randomized (all $p$s > .10).

Finally, participants who were correctly randomized were compared to those incorrectly randomized on all demographic, screening, and pre-treatment variables. There were no significant differences between the groups for any of these analyses (all $p$s > .10).

Selection/Attrition Effects

Only those participants who unexpectedly left treatment were considered dropouts; those five participants who did not receive the discharge measures due to programmatic error were, though not study completers, considered treatment completers for the purposes of attrition analyses. There was a marginally significant difference in age between treatment completers and dropouts, $t(35) = 1.84, p = .08$, such that treatment completers were older ($M = 29.91$ years, $SD = 11.30$) than dropouts ($M = 21.93$ years, $SD = 3.24$). There were no significant differences in terms of condition, $\chi^2 = 0.77, df = 1, p = .38$, PHP/IOP enrollment, $\chi^2 = 0.72, df = 1, p = .40$, gender, $\chi^2 = 0.33, df = 1, p = .57$, race (Caucasian vs. non-Caucasian), $\chi^2 = 1.30, df = 1, p = .25$, Hispanic origin (Hispanic origin vs. non-Hispanic origin), $\chi^2 = 0.74, df = 1, p = .39$, marital status, $\chi^2 = 3.96, df = 4, p = .41$, household income, $\chi^2 = 5.44, df = 7, p = .61$, or current use of psychotropic medication, $\chi^2 = 0.24, df = 1, p = .63$.

Pre-intervention outcome optimism significantly predicted treatment dropout, $t(36) = 2.05, p = .048$, though in an unexpected fashion: treatment dropouts reported significantly
higher levels ($M = 24.57, SD = 2.51$) than did treatment completers ($M = 21.58, SD = 3.65$).

There were no other significant differences between treatment completers and dropouts in terms of social interaction anxiety symptoms at screening, $t(37) = 0.08, p = .94$, shyness mindset at screening, $t(37) = 1.65, p = .11$, pre-intervention social performance anxiety symptoms, $t(36) = 0.40, p = .69$, pre-intervention social self-esteem, $t(36) = 0.28, p = .78$, or pre-intervention social phobia safety behavior usage, $t(36) = 0.34, p = .74$.

Preliminary/Descriptive Analyses

The distributions for the four most critical variables in this study (screening shyness mindset, post-intervention shyness mindset, pre-intervention social performance anxiety symptoms, and one-week follow-up social performance anxiety symptoms) were analyzed to determine whether they approximated normality. In addition to the means and standard deviations described in Table 3, the skew and kurtosis for each variable were calculated, separately for each condition. For the distribution of screening shyness mindset scores, the experimental group had a skewness of 0.25 ($SE = 0.51$) and a kurtosis of -1.19 ($SE = 0.99$), while the control group had a skewness of 0.42 ($SE = 0.52$) and a kurtosis of -1.16 ($SE = 1.01$). For the distribution of post-intervention shyness mindset scores, the experimental group had a skewness of 1.20 ($SE = 0.51$) and a kurtosis of 1.13 ($SE = 0.99$), while the control group had a skewness of -1.00 ($SE = 0.54$) and a kurtosis of 1.72 ($SE = 1.04$).

For the distribution of pre-intervention social performance anxiety symptom scores, the experimental group had a skewness of -0.25 ($SE = 0.51$) and a kurtosis of -0.64 ($SE = 0.99$), while the control group had a skewness of 0.11 ($SE = 0.54$) and a kurtosis of -1.32 ($SE = 1.04$). For the distribution of post-intervention social performance anxiety symptom scores, the
The experimental group had a skewness of 0.62 (SE = 0.54) and a kurtosis of -0.42 (SE = 1.04), while the control group had a skewness of 0.31 (SE = 0.55) and a kurtosis of -1.03 (SE = 1.06). For each of the distributions of these four critical variables, these skewness and kurtosis values indicate approximate normality.

Additionally, each of these four critical variables was converted into standardized scores for the purpose of detecting the presence of any outliers. Across all four of these variables, and across conditions and the sample as a whole, no standardized score had an absolute value greater than 2.36, indicating the lack of problematic outliers.

Test of Hypotheses

Presented analyses utilized pair-wise deletion; as such, means and standard deviations reported herein may vary from those presented in Table 3, and may vary between separate analyses utilizing data from the same collection points within the study, given participant attrition.

**Hypothesis #1/Manipulation Check**

A repeated measures analysis of variance (RM-ANOVA) revealed significant main effects of both time, $F(1,36) = 71.75, p < .001, \eta_p^2 = 0.666$, and condition, $F(1, 36) = 9.92, p = .004, \eta_p^2 = 0.203$, such that shyness mindset scores significantly decreased from screening to post-intervention, and shyness mindset scores were significantly lower in the experimental condition. These effects were qualified however by a significant interaction between condition and within-subjects change in shyness mindset, $F(1,36) = 30.99, p < .001, \eta_p^2 = 0.463$, such that participants in the experimental condition showed a significantly greater decrease in
shyness mindset from screening ($M = 21.45, SD = 3.38$) to post-intervention ($M = 12.05, SD = 5.45$) than did participants in the control condition (from $M = 21.00, SD = 2.61$ to $M = 19.06, SD = 3.47$). When this analysis was extended to the change from screening to one-week follow-up, there remained a significant main effect of decreasing shyness mindset over time for the entire sample, $F(1,33) = 78.80, p < .001, \eta_p^2 = 0.705$. However, the main effect of condition was only marginally significant, $F(1,33) = 3.08, p = .088, \eta_p^2 = 0.085$, with lower shyness mindset in the experimental condition. These effects were qualified by a significant interaction between condition and within-subjects change in shyness mindset, $F(1,33) = 12.92, p = .001, \eta_p^2 = 0.281$, such that experimental participants showed a significantly greater decrease in shyness mindset from screening ($M = 21.61, SD = 3.52$) to one-week follow-up ($M = 13.00, SD = 5.01$) than did control participants (from $M = 21.00, SD = 2.69$ to $M = 17.35, SD = 3.33$).

When analyzing change from screening to discharge, there remained a main effect of decreasing shyness mindset over time, $F(1,24) = 52.40, p < .001, \eta_p^2 = 0.686$. However, there was neither a significant main effect of condition, $F(1,24) = 0.27, p = .608, \eta_p^2 = 0.011$, nor a significant interaction between condition and within-subjects change in shyness mindset, $F(1,24) = 1.91, p = .18, \eta_p^2 = 0.074$. This overall pattern of results remained when analyses were limited to study completers. Additionally, analyses were repeated with the sample restricted to those who were correctly randomized; the means and differences were similar to those found when utilizing the entire sample.

In the experimental condition, paired samples t-tests showed that shyness mindset significantly decreased from screening to post-intervention, $t(19) = 8.67, p < .0001$, to one-week follow-up, $t(17) = 8.12, p < .0001$, and to discharge, $t(12) = 7.70, p < .0001$. This same analysis procedure showed that in the control condition, shyness mindset also significantly
decreased from screening to post-intervention, $t(17) = 2.65, p = .02$, to one-week follow-up, $t(16) = 4.19, p = .001$, and to discharge, $t(12) = 3.53, p = .004$. This overall pattern of results remained when analyses were limited to study completers. Additionally, analyses were repeated with the sample restricted to those who were correctly randomized; the means and differences were similar to those found when utilizing the entire sample.

Additionally, all demographic, screening, and pre-intervention variables were explored as possible predictors of experimental participants’ response to the intervention. After controlling for pre-intervention shyness mindset, none of these variables significantly predicted post-intervention shyness mindset (all $p$s > .28).

**Hypothesis #2**

A RM-ANOVA revealed a significant main effect of time, $F(1,33) = 9.81, p = .004$, $\eta_p^2 = 0.229$, such that social performance anxiety symptoms significantly decreased from pre-intervention to one-week follow-up. However, there was neither a significant main effect of condition, $F(1,33) = 1.48, p = .232$, $\eta_p^2 = 0.043$, nor a significant interaction between condition and within-subjects change in social performance anxiety symptoms, $F(1,33) = 0.29, p = .59$, $\eta_p^2 = 0.009$, such that participants in the experimental condition did not show a significantly greater decrease in social performance anxiety symptoms from pre-intervention to one-week follow-up. When analyzing change in social performance anxiety symptoms from pre-intervention to discharge, there remained a significant main effect of decreasing symptoms over time, $F(1,24) = 17.46, p < .001$, $\eta_p^2 = 0.421$. However, there was neither a significant main effect of condition, $F(1,24) = 2.93, p = .10$, $\eta_p^2 = 0.109$, nor a significant interaction between condition and within-subjects change in social performance anxiety symptoms, $F(1,24) = 0.16$, $p = .73$. 
\[ p = .70, \eta_p^2 = 0.006, \] such that participants in the experimental condition did not show a significantly greater decrease in social performance anxiety symptoms from pre-intervention to discharge. This lack of significant differences between conditions also held when the analyses were limited to study completers. Additionally, analyses were repeated with the sample restricted to those who were correctly randomized; the means and differences were similar to those found when utilizing the entire sample.

**Hypothesis #3**

Regression analyses were conducted to assess each component of post-intervention shyness mindset’s proposed mediation of the condition-social performance anxiety symptom relationship, utilizing the mediation analysis procedure recommended and described by Preacher and Hayes (2004; see Table 4 for data summary). Condition was entered as the independent variable (IV), one-week follow-up social performance anxiety symptoms as the dependent variable (DV), pre-intervention social performance anxiety symptoms as a covariate, and post-intervention shyness mindset as the mediator. As reported above for the test of Hypothesis #2, it was found that condition did not significantly predict one-week follow-up social performance anxiety scores, \( b = -0.13, t(33) = -0.10, p = .92 \). However, this does not preclude the existence of significant mediators of this relationship, as multiple, unmeasured pathways can exist between an IV and DV, which collectively can result in a non-significant zero-order relationship and obscure significant mediation pathways (Hayes, 2009; MacKinnon, Lockwood, & Williams, 2004; Preacher and Hayes, 2004). Therefore, the analysis was continued as recommended by Preacher and Hayes (2004).
Table 4

Regression Analyses Results for Hypothesis Three: Post-Intervention Shyness Mindset Mediating the Relationship Between Condition and Both One-Week Follow-up and Discharge Social Performance Anxiety, Controlling for Pre-Intervention Social Performance Anxiety

<table>
<thead>
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<th>DV = 1W Social Performance Anxiety</th>
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<tbody>
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<td>Step 1</td>
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<tr>
<td>Condition</td>
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<td>Step 2</td>
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<tr>
<td>Post shyness mindset</td>
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<td>0.12</td>
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<table>
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<th>DV = Disc Social Performance Anxiety</th>
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</tr>
<tr>
<td>Post shyness mindset</td>
<td>0.48**</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Note. Additional data are presented in text. DV = dependent variable; 1W = one-week follow-up; Post = post-intervention; Disc = discharge. *p < .05. **p < .01.

Condition did significantly predict post-intervention shyness mindset, $b = -7.13$, $t(33) = -4.33$, $p < .001$. Additionally, post-intervention shyness mindset significantly predicted one-week follow-up social performance anxiety symptoms, $b = 0.41$, $t(33) = 3.54$, $p = .001$.

Because both the IV-mediator and mediator-DV relationships were significant, mediation analyses were conducted utilizing the bootstrapping method with bias-corrected confidence estimates (MacKinnon et al., 2004; Preacher & Hayes, 2004). The 95% confidence interval of the indirect effect was calculated using 5000 bootstrap resamples (Preacher & Hayes, 2008). Results of this analysis demonstrated that post-intervention shyness mindset did significantly mediate the relationship between condition and one-week follow-up social performance anxiety symptoms, when controlling for pre-intervention social performance anxiety symptoms, $b =$ -
2.88, 95% CI = -5.96 to -1.08 (since the confidence interval does not include zero, the regression coefficient for the mediator pathway is deemed significant at the $p < .05$ level; MacKinnon et al., 2004; Preacher and Hayes, 2004; Preacher and Hayes, 2008). This pattern of results remained when analyses were limited to study completers. Additionally, analyses were repeated with the sample restricted to those who were correctly randomized; the pattern of results was similar to that found when utilizing the entire sample.

These analyses were then repeated, though this time with discharge social performance anxiety symptoms as the DV. Similar to the first analyses, condition did not significantly predict discharge social performance anxiety scores, $b = 1.14$, $t(24) = 0.70$, $p = .49$. However, condition did significantly predict post-intervention shyness mindset, $b = -6.96$, $t(24) = -3.46$, $p = .002$, as it did when the first analyses were limited to study completers (participants completing the discharge data collection were, by definition, study completers). Additionally, post-intervention shyness mindset significantly predicted discharge social performance anxiety symptoms, $b = 0.48$, $t(24) = 3.56$, $p = .002$. Because both the IV-mediator and mediator-DV relationships were significant, mediation analysis was again conducted utilizing the previously-described bootstrapping method. Results of this analysis demonstrated that post-intervention shyness mindset did significantly mediate the relationship between condition and discharge social performance anxiety symptoms, when controlling for pre-intervention social performance anxiety symptoms, $b = -3.45$, 95% CI = -7.92 to -1.40. Analyses were repeated with the sample restricted to those who were correctly randomized; the pattern of results was similar to that found when utilizing the entire sample.
Hypotheses #4 and #5

The proposed mediational models of these hypotheses (both one-week follow-up social phobia safety behaviors and post-intervention outcome optimism would mediate the relationship between post-intervention shyness mindset and social performance anxiety symptoms) were analyzed via a single multiple mediation, which utilized essentially the same procedure as the analysis of Hypothesis #3, only with multiple mediators entered simultaneously (Preacher & Hayes, 2008; see Table 5 for data summary). Post-intervention shyness mindset was entered as the IV, one-week follow-up social performance anxiety symptoms were entered as the DV, pre-intervention social performance anxiety symptoms were entered as a covariate, and both one-week follow-up social phobia safety behaviors and post-intervention outcome optimism were entered as mediators. Analyses showed that post-intervention shyness mindset significantly predicted one-week follow-up social performance anxiety symptoms, $b = 0.41$, $t(33) = 3.54$, $p < .001$. Regarding the IV-mediator relationships, post-intervention shyness mindset was significantly associated with post-intervention outcome optimism, $b = -0.28$, $t(33) = -2.46$, $p = .02$. However, post-intervention shyness mindset was not significantly associated with one-week follow-up social phobia safety behaviors, $b = 0.23$, $t(33) = 1.38$, $p = .18$. The analyses of mediator-DV relationships showed that post-intervention outcome optimism was not significantly associated with one-week follow-up social performance anxiety symptoms, $b = 0.12$, $t(33) = 0.83$, $p = .41$, though one-week follow-up social phobia safety behaviors was significantly associated with one-week follow-up social performance anxiety symptoms, $b = 0.22$, $t(33) = 2.28$, $p = .03$. Because the IV-mediator and mediator-DV paths were not both significant for either proposed mediator, the proposed
mediational models were not supported by the data (MacKinnon et al., 2004; Preacher and Hayes, 2004; Preacher and Hayes, 2008). This lack of mediation was confirmed by the aforementioned bootstrapping technique, using 5000 bootstrap resamples to calculate a 95% confidence interval of the indirect effect; the relationship between post-intervention shyness mindset and one-week follow-up social performance anxiety symptoms was not significantly mediated by either one-week follow-up social phobia safety behaviors, \( b = 0.05, 95\% \text{ CI} = -0.01 \text{ to } 0.19 \), or post-intervention outcome optimism, \( b = -0.03, 95\% \text{ CI} = -0.14 \text{ to } 0.03 \). When these analyses were limited to study completers, again neither variable was a significant mediator of the relationship between post-intervention shyness mindset and one-week follow-up social performance anxiety symptoms. Analyses were also repeated with the sample restricted to those who were correctly randomized; the pattern of results was similar to that found when utilizing the entire sample.

As with Hypothesis #3, these analyses were repeated, this time using discharge social performance anxiety symptoms as the DV. As in the first analysis, the relationship between the IV, post-intervention shyness mindset, and the DV, this time discharge social performance anxiety symptoms, was significant, \( b = 0.48, t(24) = 3.56, p = .002 \). For the IV-mediator relationships, post-intervention shyness mindset was not significantly associated with one-week follow-up social phobia safety behaviors, \( b = -0.02, t(24) = -0.11, p = .92 \). However, the relationship between post-intervention shyness mindset and post-intervention outcome optimism was marginally significant, \( b = -0.28, t(24) = -1.96, p = .06 \) (these IV-mediator analyses are identical to those of the first analyses of Hypotheses #4 and #5 when they were limited to study completers). Regarding the mediator-DV relationships, neither one-week
Table 5

Regression Analyses Results for Hypotheses Four and Five: Both Post-Intervention Outcome Optimism and One-Week Follow-up Social Phobia Safety Behaviors Mediating the Relationship Between Post-Intervention Shyness Mindset and Both One-Week Follow-up and Discharge Social Performance Anxiety, Controlling for Pre-Intervention Social Performance Anxiety

<table>
<thead>
<tr>
<th></th>
<th>b</th>
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<td><strong>DV = 1W Social Performance Anxiety</strong></td>
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<tr>
<td>Step 1</td>
<td></td>
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<tr>
<td>Post shyness mindset</td>
<td>0.41**</td>
<td>0.12</td>
<td>.44**</td>
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<td>Step 2</td>
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<td>1W safety behaviors</td>
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<td>.26*</td>
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<td>Post outcome optimism</td>
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<td>.09</td>
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<td>Step 1</td>
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<td>Post shyness mindset</td>
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<td>0.14</td>
<td>.64**</td>
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<tr>
<td>1W safety behaviors</td>
<td>0.14</td>
<td>0.13</td>
<td>.19</td>
</tr>
<tr>
<td>Post outcome optimism</td>
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<td>0.18</td>
<td>-.98</td>
</tr>
</tbody>
</table>

*Note.* Additional data are presented in text. DV = dependent variable; Post = post-intervention; 1W = one-week follow-up; Disc = discharge. *p < .05. **p < .01.
follow-up social phobia safety behaviors, $b = 0.14$, $t(24) = 1.05$, $p = .30$, nor post-intervention outcome optimism, $b = -0.29$, $t(24) = -1.60$, $p = .12$, were significantly associated with discharge social performance anxiety symptoms. Since both IV-mediator and mediator-DV paths were not significant for either mediator, the mediation model was again not supported. The lack of significance for these proposed mediators was confirmed by the previously-described bootstrapping technique, $b = -0.01$, 95% CI = -0.12 to 0.05 (one-week follow-up social phobia safety behaviors) and $b = 0.10$, 95% CI = -0.01 to 0.41 (post-intervention outcome optimism). Analyses repeated with the sample restricted to those who were correctly randomized revealed that the pattern of results was similar to that found when utilizing the entire sample.

Hypothesis #6

A RM-ANOVA revealed a significant main effect of time, $F(1,33) = 6.93$, $p = .013$, $\eta^2_p = 0.174$, such that social self-esteem significantly increased from pre-intervention to one-week follow-up. However, there was neither a significant main effect of condition, $F(1,33) = 2.65$, $p = .113$, $\eta^2_p = 0.074$, nor a significant interaction between condition and within-subjects change in social self-esteem, $F(1,33) = 2.62$, $p = .12$, $\eta^2_p = 0.074$, such that participants in the experimental condition did not show a significantly greater increase in social self-esteem from pre-intervention to one-week follow-up. When analyzing change in social self-esteem from pre-intervention to discharge, there was again a significant main effect of time, $F(1,24) = 36.49$, $p < .001$, $\eta^2_p = 0.603$, such that social self-esteem among participants significantly increased. There was also a significant main effect of condition, $F(1,24) = 5.70$, $p = .03$, $\eta^2_p = 0.192$, such that participants in the control condition showed higher levels of social self-esteem. However, the
interaction between condition and social self-esteem failed to reach significance when comparing the change from pre-intervention to discharge, $F(1, 24) = 0.02$, $p = .88$, $\eta^2_p = 0.001$. This lack of significant differences among the interaction terms also held when the analyses were limited to study completers. Additionally, analyses were repeated with the sample restricted to those who were correctly randomized; the means and differences were similar to those found when utilizing the entire sample.

Follow-Up Analyses

As discussed regarding Hypothesis #3, it was found that post-intervention shyness mindset significantly mediated the relationship between condition and both one-week follow-up and discharge social performance anxiety symptoms (in separate analyses), controlling for pre-intervention social performance anxiety symptoms. This mediation was evident despite the fact that in both analyses, the zero-order relationship between condition and social performance anxiety symptoms was non-significant. Interestingly, after these analyses accounted for the significant post-intervention shyness mindset mediation pathway, the remaining partial relationship between condition and social performance anxiety symptoms was in fact significant, when either one-week follow-up social performance anxiety symptoms, $b = 3.13$, $t(33) = 2.36$, $p = .03$, or discharge social performance anxiety symptoms, $b = 3.87$, $t(24) = 2.36$, $p = .03$, were used as the DV (see Figure 2 for a diagram of these relationships, using one-week follow-up social performance anxiety symptoms as the DV, and displaying partial correlations from regression analyses of this model). However, these significant partial IV-DV coefficients were in the opposite direction than those of the zero-order relationships, and contrary to prediction: the experimental condition was associated with higher social performance anxiety...
symptoms, controlling for pre-intervention levels. This finding suggests that although lower levels of shyness mindset, resulting from the study intervention, predicted subsequent decreases in social performance anxiety symptoms, some other unknown variables or variables, also resulting from the study intervention, may have caused an increase in these symptoms.

Given this finding, follow-up mediation analyses were conducted in accordance with the previously-described procedure to elucidate these additional mediational pathways, utilizing the remaining variables in this study. In addition to post-intervention shyness mindset, post-intervention outcome optimism, one-week follow-up social phobia safety behaviors, and one-week follow-up social self-esteem were entered as possible mediators of the relationship between condition and one-week follow-up social performance anxiety symptoms, while pre-intervention social performance anxiety symptoms were entered as a covariate. Although the significance of the post-intervention shyness mindset mediator remained, none of the three additional possible mediators had any significant relationship with either the IV (condition) or the DV (one-week follow-up social performance anxiety symptoms). The aforementioned bootstrap procedure confirmed the lack of significant mediation by either post-intervention outcome optimism ($b = 0.03$, 95% CI = -0.68 to 0.91), one-week follow-up social phobia safety behaviors ($b = -0.15$, 95% CI = -1.22 to 0.46), or one-week follow-up social self-esteem ($b = 0.07$, 95% CI = -0.36 to 0.87). Additionally, none of these possible mediators showed a significant relationship with discharge social performance anxiety symptoms when the analyses were repeated using those scores as the DV, and again each of the mediation pathways of these
three additional variables were non-significant. Each of these results remained unchanged when analyses were limited to study completers, and the pattern of results was similar when analyses were limited to those participants who were correctly randomized.

Additional analyses were conducted to consider the possibility that the intervention increased the degree to which participants attributed changes in symptoms to the malleability of shyness. Zero-order correlations were calculated for the relationships between shyness mindset and social performance anxiety symptoms, examined at both one-week follow-up and discharge, and separately for each condition. One-week follow-up shyness mindset was significantly correlated with one-week social performance anxiety symptoms, in the experimental condition, $r(16) = .70, p = .001$, but this relationship was only marginally
significant in the control condition, $r(11) = .54$, $p = .057$. Comparison of these correlations was calculated utilizing the method described in Preacher (2002). The coefficients are converted into $z$-scores using Fisher's $r$-to-$z$ transformation. Then, utilizing the sample size for each coefficient, these $z$-scores are compared using the formula described in Cohen and Cohen (1983, p. 54). This results in a $z$-score that can be compared to a normal distribution to determine statistical significance; a statistically significant $z$-score (i.e., greater than $|1.96|$) indicates significantly different correlation coefficients. The magnitude of these correlations did not differ significantly, $z = 0.65$, $p = .26$. Discharge follow-up shyness mindset was significantly correlated with discharge social performance anxiety symptoms, in the experimental condition, $r(16) = .63$, $p = .02$, but not in the control condition, $r(11) = .18$, $p = .56$. The magnitude of these correlations did not differ significantly, $z = 1.37$, $p = .17$. The differences were not inconsistent with the possibility that the intervention increased the degree to which participants interpreted changes in symptoms to the malleability of shyness, but the non-significant results were inconclusive. These non-significant results were also the case when analyses were limited to either study completers or those participants randomized correctly.
The current study looked to integrate and extend the findings of Valentiner et al. (2013) and Jarek and Valentiner (2012). The first of these studies had demonstrated that individuals in a clinical population who reported higher pre-treatment levels of an incremental shyness mindset showed a greater reduction in social performance anxiety symptoms during the course of intensive exposure therapy treatment at an anxiety disorders clinic (Valentiner et al., 2013). The second had demonstrated that shyness mindset was malleable in a nonclinical college population (Jarek & Valentiner, 2012), using an intervention adapted from those shown to modify intelligence mindset (e.g., Aronson et al., 2002). Pilot testing, using a similar intervention, suggested that shyness mindset was also malleable in a clinical population. The current study was designed to test whether an induced incremental shyness mindset in a clinical population would produce greater reduction in social performance anxiety symptoms during the course of exposure therapy, and to potentially elucidate the mechanisms involved.

Consistent with pilot testing, it was found that shyness mindset was malleable in the current study’s sample, patients enrolled in an outpatient clinic for the treatment of anxiety disorders. Participants who underwent the intervention had a greater reduction in shyness mindset from screening to post-intervention (Cohen’s $d = 2.09$) than did those in the control group (Cohen’s $d = 0.64$). This finding mirrors that of Jarek and Valentiner (2012), and, in the intelligence mindset domain, is similar to that of Blackwell et al. (2007). It is important to note
that, although the participants in the experimental condition had the larger reduction, participants in the control condition still experienced significant change in shyness mindset. As such, it appears that shyness mindset was reduced by the intervention, but also potentially by the process of the treatment at ABBHH. Perhaps exposure therapy’s effects alone promote a more incremental shyness mindset, as individuals may interpret their reducing levels of anxiety symptoms as evidence that their shyness itself can change.

Although not an a priori prediction, this larger decrease in shyness mindset among experimental participants was also evident at one-week follow-up, similar to the findings of Jarek and Valentiner (2012). However, by discharge the difference between groups was no longer significant. It should also be noted that, after the measurement of post-intervention shyness mindset (which occurred early enough in treatment that no change in social performance anxiety could be reasonably expected by that point), further reductions or maintenance of reductions in shyness mindset may also have been the result of decreasing social performance anxiety symptoms as a result of the treatment at ABBHH. Although the theoretical model of this study predicted that reductions in shyness mindset would lead to reductions in social performance anxiety symptoms, the inverse is also possible. Participants experiencing a decrease in their social anxiety symptoms may have then reasonably concluded that their shyness was in fact not static, and developed a more incremental mindset of their shyness. As such, the relationship between shyness mindset and social performance anxiety symptoms may be bidirectional. Therefore, as shyness mindset decreased during the course of therapy in the control (as well as experimental) condition, the earlier significant difference between groups in shyness mindset change disappeared by discharge.
Additionally, experimental participants who underwent the shyness mindset intervention may have been particularly primed to attribute changes in their social performance anxiety symptoms to a more incremental shyness mindset, a possibility that is hinted at by the additional correlational analyses conducted, separately by condition, between one-week follow-up shyness mindset and one-week follow-up social performance anxiety symptoms, and between discharge shyness mindset and discharge social performance anxiety symptoms. Despite the larger correlations in the experimental condition, the non-significance of the comparisons of these coefficients between conditions resulted in an inconclusive finding on this issue.

Failing to support prediction, participants in the experimental condition did not show a significantly greater decrease in social performance anxiety symptoms during the course of their treatment than did those in the control condition, though the data were in the predicted direction. Post-hoc power analyses were completed using the effect sizes demonstrated in the current study for the interactions between condition and within-participants change in social performance anxiety symptoms. These analyses revealed that 54 participants in each group would have been required to achieve a significant interaction utilizing one-week follow-up social performance anxiety symptoms as the DV, while 164 participants would have been necessary in each group to achieve significance utilizing discharge social performance anxiety symptoms as the DV (power = .80 in each case).

Setting aside the issue of power, this lack of significant difference would suggest that the intervention did not impact these symptoms. However, it was also found that shyness mindset mediated the relationship between participant condition and social performance
anxiety symptoms, such that the current study’s intervention caused decreases in shyness mindset, which were then associated with decreases in social performance anxiety symptoms.

Two main interpretations of this pattern of results are possible. Most parsimoniously is that shyness mindset is not causally related to change in social performance anxiety symptoms, at least in the treatment context of this study. It is quite possible that some unknown and unmeasured element or process affected both shyness mindset and social performance anxiety symptoms, such that they had a correlated association, but neither variable was causal in its relationship with the other. This would be analogous to the “third variable” problem seen in correlational statistical analyses, where two variables are correlated, but in fact neither causes the other. Rather, they are both driven by an unknown third variable. In this interpretation, the significant, negative association between condition and social performance anxiety symptoms that was found after accounting for the mediating factor of shyness mindset would be a spurious finding. This relationship may be particularly unique in the context of therapy, as the treatment of social performance anxiety symptoms presumably produces substantial changes in behavior and symptoms, and any effects of shyness mindset on social performance anxiety symptoms could be overwhelmed by the effects of treatment. In fact, some element or elements of the process of treatment itself could be the unknown third variable, driving change in both shyness mindset and social performance anxiety symptoms.

A second, somewhat less parsimonious explanation also remains tenable. It may be that, as recent literature on mediation suggests is possible (e.g., Hayes, 2009; MacKinnon et al., 2004; Preacher & Hayes, 2004), multiple mediational pathways combined to produce an overall negligible effect between the IV and DV. In the current study, the data is consistent with the
possibility that another mediational pathway or pathways counteracted that of shyness mindset in the relationship between condition and social performance anxiety symptoms. This possibility considers the fact that once the shyness mindset mediational pathway was accounted for, the significant relationship between condition and social performance anxiety symptoms (such that participants in the experimental condition showed an increase in these symptoms) was meaningful. This interpretation suggests that although the intervention reduced participants’ shyness mindset, which was then associated with a reduction in social performance anxiety symptoms, it also had an effect associated with increases in these same symptoms.

Although it is unclear what process or processes would be responsible for the intervention’s potential negative effect, one possibility is that participants, having been told that shyness is something that can be changed, may have judged themselves negatively for their inability, up to that point, to have already better managed or reduced their symptoms. This self-criticism then, in turn, may have negatively impacted their treatment process, while individuals in the control condition, not having experienced the intervention, would have had no such experience. However, failing to support this rationale, this additional effect was not found to operate through social self-esteem. Although there was no theoretical basis for such speculation, for the sake of completeness outcome optimism and social phobia safety behaviors were also analyzed as potential mediators of the relationship between condition and social performance anxiety symptoms; neither were found to be a significant mediator. Future research could attempt to replicate these findings and elucidate the possibility of an unintended effect.
It should also be reiterated that the ABBHH program is a particularly high level of care, consisting of half or full day psychotherapy treatment immersion. Many patients put their jobs and/or other aspects of their lives on hold due to impairment in order to attend the program. As such, these patients are typically not undergoing initial or early attempts at behavior change, but rather are generally individuals for whom typical outpatient psychotherapy has proven ineffective, necessitating more intensive efforts towards symptom reduction. Therefore, it is likely that this study’s participants represented a sample significantly more impaired than most treatment-seeking individuals. It is quite possible that any effect of the intervention on social performance anxiety symptoms would be more readily apparent in a sample receiving less intensive treatment, such as those undergoing more traditional one-hour per week outpatient psychotherapy.

Failing to support predictions, the relationship between shyness mindset and social performance anxiety symptoms was not found to be mediated by either increased outcome optimism or a reduction in social phobia safety behaviors. Decreases in shyness mindset were associated with increases in outcome optimism, providing support for the rationale that reducing shyness mindset, thereby increasing a malleable view of shyness, would promote hope in participants that their particular social anxiety concerns could be successfully treated. However, outcome optimism was not in turn associated with social performance anxiety symptoms. As such, a general increase in non-specific optimism for treatment success (i.e., outcome optimism) had no effect on the reduction of social performance anxiety symptoms.

This result is perhaps surprising, given the modest but consistent empirical evidence that favorable expectations can be positively associated with treatment outcomes (e.g., Constantino
et al., 2011; Greenberg et al., 2006), including within treatment for anxiety disorders (Halperin, Weitzman, & Otto, 2010; these authors also describe a process of measuring outcome expectancies mid-treatment, consistent with the current study’s procedure).

Regarding safety behaviors, their decrease was shown to be associated with decreases in social performance anxiety symptoms, as would be expected. However, they were not found to be associated with changes in shyness mindset. This lack of association suggests three possibilities. One, if in fact there is no causal relationship between shyness mindset and social performance anxiety symptoms, there would be no necessary reason to expect shyness mindset to affect variables known to be associated with such symptoms. Two, the rationale that a reduction in shyness mindset would produce a decrease in orientation towards performance goals, manifested in a decreased desire to hide failure and/or difficulties from the self and others (i.e., safety behaviors), may be incorrect. Three, this rationale may in fact be correct, but the incorrect variable (social phobia safety behaviors) may have been chosen to illustrate this process. Perhaps other constructs previously shown to be particularly associated with social anxiety, such as self-focused attention and/or social cost overestimation (Clark, 2001; Clark & Wells, 1995), would demonstrate a relationship with shyness mindset. Or, perhaps a broader or more encompassing variable would be better suited to explain any (possible) connection between shyness mindset and reductions in social performance anxiety symptoms. One possibility is experiential avoidance, which is defined as an unwillingness to experience various emotional states (e.g., thoughts, emotions), most notably negative states such as anxiety or thoughts of failure (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Experiential avoidance can manifest itself in a variety of behaviors, including safety behaviors, and may be a more
theoretically comprehensive way to describe the avoidance experienced by those with social performance anxiety.

Lastly, in terms of the current study’s predictions, no differences were found between conditions in terms of participants’ increase in social self-esteem, failing to replicate the findings of Jarek and Valentiner (2012). However, analysis of the means of each condition across time points reveals that changes were in the predicted direction; experimental participants went from mean pre-intervention TSBI scores of 20.11 ($SD = 5.67$) to one-week follow-up mean scores of 24.06 ($SD = 8.76$), while those in the control condition showed more modest change, from 26.06 ($SD = 10.11$) to 27.00 ($SD = 9.06$). A similar, albeit less pronounced, pattern emerged from the pre-intervention to discharge comparisons, where participants in the experimental condition went from a TSBI mean of 19.62 ($SD = 6.46$) to that of 29.08 ($SD = 7.29$), while those in the control condition went from 27.23 ($SD = 11.07$) to 36.23 ($SD = 9.59$; please be reminded that the pair-wise deletion utilized by these analyses is responsible for the differences in pre-intervention means from one analysis to the other). This finding suggests that the relatively low power of the current study, due to its small sample size, may be primarily to blame for the lack of significant differences in social self-esteem change, rather than the hypothesis being incorrect, per se. This lack of convergence with previous findings could be also be due, in part, to the use of different measures of the self-esteem construct between the two studies; Jarek and Valentiner utilized the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), which may have resulted in slightly different constructs being analyzed. It should be noted, however, that the TSBI and the RSES have been shown to strongly correlate (e.g., $r = .62$; Robins, Hendin, & Trzesniewski, 2001). Despite this
correlation, another possibility is that the TSBI is not ideally suited to measure self-esteem, social or otherwise. Some of the items of the TSBI (e.g., “I enjoy being in front of large audiences”) appear to measure extroversion. Additionally, the TSBI does not measure an “idealized self” or other aspects of self-views.

Treatment Implications

The results of the current study suggest that shyness mindset is malleable in a clinical population, but leave open the question of whether promoting a more incremental shyness mindset could have benefits in the form of reduced social performance anxiety symptoms resulting from exposure therapy treatment. The most parsimonious explanation of the data, that shyness mindset is not causally related to changes in social performance anxiety symptoms, suggests that targeting shyness mindset change during anxiety treatment is unnecessary. The alternate explanation that reduced shyness mindset was associated with reductions in social performance anxiety symptoms, but that the relationship between condition and social performance anxiety symptoms was obscured by an unintended negative effect of the intervention, presents more varied possibilities for discussion. Given this interpretation, this study provides evidence that shyness mindset is a potential target of intervention for those undergoing such treatment, and that such intervention may provide a significant boost to an already efficacious form of treatment. However, it would then appear that the current study’s intervention is as detrimental as it is beneficial. Despite changes in shyness mindset being associated with decreases in the target symptoms, some aspect of the intervention appears to have had an unintended effect, increasing these symptoms (again, utilizing an interpretation
that does not assume this finding to be spurious). Therefore, alterations to the intervention would be warranted, though it is currently unclear what changes would be required, as it is not clear how and why the intervention could have produced this negative unintended effect. Further studies testing the component pieces of the intervention could be useful in empirically determining the particular factor or factors which produce both the beneficial change in shyness mindset and the detrimental unintended effect. It may be necessary to test each of the intervention’s elements (e.g., presentation of research evidence for the efficacy of exposure treatment for anxiety disorders, video testimonials), alone and in various combinations and permutations, in order to determine which are responsible for the two key effects seen in one interpretation of the current study’s data. Additionally, other elements may be considered for inclusion and testing in future interventions, such as testimonials which center on individuals who describe their own experiences with anxiety treatment (the intervention of the current study included testimonials of individuals describing general lifespan change), or information tailored more explicitly to the expected treatment experiences of the particular study setting (e.g., describing the course of treatment at ABBHH and how it is expected to reduce patients’ shyness). Alternatively, other experimental methods of attitude/belief change could be considered for future study, as these may not carry with them the unintended negative effect demonstrated by the current study’s intervention. Possibilities includes an intervention more closely aligned with that implemented by Blackwell et al. (2007) in their study of intelligence mindset, which did not include components such as motivational elements or the “saying is believing” paradigm, or therapist-provided process praise (i.e., frequent praise of efforts to overcome shyness or socially inhibited behaviors, but not praise for the outcome of these
efforts). Such praise strategies have been shown to promote a more incremental mindset, at least in the intelligence mindset literature (Dweck, 2008; Mueller & Dweck, 1998).

Limitations

The current study had several limitations. The sample size was particularly small, limiting the power of the analyses and generalizability of the results. The inclusion criteria utilized, as well as fluctuations in the patient enrollment at ABBHH, led to very few patients qualifying to participate, and produced the small number of participants for this study. Errors in the study’s administration led to the loss of potential discharge data for five participants, which also further contributed to the limited sample size, at least for those analyses utilizing the discharge data time point. Additionally, errors in randomization to condition occurred, though supplemental analyses appeared to demonstrate the pattern of findings in the current study were not impacted by such. Future studies should look to increase the sample size collected, either by expanding the time frame for data collection, utilizing other, higher-census treatment programs, or additional avenues.

Participants in the control condition received TAU rather than an additional component, equivalent in time and engagement to the experimental intervention. This was done in order to contrast the results of the experimental condition with those gathered from the typical experience of a patient in ABBHH, but may have alerted control participants to their assigned condition, as the lack of a noticeable, active study element may have been suggestive of said assignment. In turn, this recognition may have affected the experience of the control participants in a variety of ways. For example, this recognition may have produced
disappointment in control participants, reducing their engagement in treatment and artificially inflating the difference between conditions on measures of some constructs (e.g., shyness mindset). Future studies may look to include a control intervention, either as a replacement for the control condition’s TAU time, or as an added third condition.

The current study also represented a blend of sorts between efficacy and effectiveness treatment study designs. Efficacy studies refer to those which are conducted under tight controls (e.g., homogenous sample, treatment manual usage), which, due to said control, are often best for demonstrating effects of newly developed or substantially modified treatment approaches (Hoagwood & Hibbs, 1995). Effectiveness studies, on the other hand, refer to those which are conducted in more “real-world” or generalizable settings, generally lacking in the degree of experimental control as that of efficacy studies (Hoagwood & Hibbs, 1995; Kazdin, 2003). Ideally, interventions shown to be efficacious in laboratory or quasi-laboratory settings then have their effectiveness demonstrated in naturally-occurring settings. The current study has elements of both designs, and as such may not be optimally designed to determine the efficacy of the described intervention. The inevitable variation in exact treatment approach and style among ABBHH’s various therapists quite possibly resulted in confounding differences between conditions, given the rather small participant sample. Assurance that such possible confounds are eliminated, via equal distribution between groups, likely requires significantly greater participant numbers than was achieved in the current study.

Finally, this study’s sample was predominantly Caucasian and relatively affluent economically. As such, the generalizability of the findings is potentially limited, given the over-representation of these demographics relative to the larger treatment-seeking population.
Further studies should look to increase the demographic diversity of the participant sample to increase the generalizability of the findings regarding the role (or lack thereof) of shyness mindset change in treatment outcomes.

Conclusions

The current study provided support for the ability to alter shyness mindset in a clinical population, but left open the question of whether doing so can positively impact the course of treatment for social performance anxiety symptoms. Two main interpretations of the current study’s data were possible, the most parsimonious of which suggested that shyness mindset and social performance anxiety symptoms were not causally linked. An alternative interpretation, less parsimonious but tenable, suggested that decreases in shyness mindset were associated with decreases in social performance anxiety symptoms (via unknown mechanisms), but that an unknown variable or process produced by the shyness mindset intervention also caused an increase in these symptoms. The former interpretation would suggest that shyness mindset is an unnecessary target of change during anxiety treatment, while the later interpretation would point towards the need for greater refinement of the utilized shyness mindset intervention.
REFERENCES


APPENDIX

MEASURES AND FORMS
Demographic Questionnaire

1. What is your date of birth (MM/DD/YYYY)?  _____ / _____ / _________

2. Sex (circle one):
   Female  Male

3. Are you Spanish/Hispanic/Latino (circle one):
   Yes, Puerto Rican  Yes, other Spanish/Hispanic/Latino
   Yes, Mexican, Mexican American, Chicano
   No, not Spanish/Hispanic/Latino

4. Race (circle one or more):
   White
   Black, African American or Negro
   American Indian or Alaska Native
   Asian Indian
   Japanese
   Native Hawaiian
   Chinese
   Korean
   Guamanian or Chamorro
   Vietnamese
   Other Asian
   Other Pacific Islander
   Some Other Race
5. **Marital Status** (circle one):

- Never Married
- Living w/ Significant Other
- Married
- Separated
- Divorced
- Widowed

6. **Annual Family Income** (circle one):

- Less than $45,000
- $45,001 – $50,000
- $50,001 – $55,000
- $55,001 – $60,000
- $60,001 – $65,000
- Over $65,000

7. **Have you taken medication to help with psychological issues?** (circle one):  

   - YES  
   - NO

   If Yes, are you currently taking that medication? (circle one):  

   - YES  
   - NO
SIAS-SF

Instructions: Indicate the degree to which you feel the statement is characteristic or true of you

1. I become tense if I have to talk about myself or my feelings.
   Not at all    Slightly    Moderately    Very    Extremely

2. I tense-up if I meet an acquaintance in the street.
   Not at all    Slightly    Moderately    Very    Extremely

3. I feel tense if I am alone with just one other person.
   Not at all    Slightly    Moderately    Very    Extremely

4. I am nervous mixing with people I don’t know well.
   Not at all    Slightly    Moderately    Very    Extremely

5. When mixing in a group I find myself worrying I will be ignored.
   Not at all    Slightly    Moderately    Very    Extremely

6. I am tense mixing in a group.
   Not at all    Slightly    Moderately    Very    Extremely
**ISTSS**

Thinking about your shyness, please pick one number for each question, anywhere from 1 (disagree strongly) to 5 (agree strongly):

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree strongly</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) I have a certain level of shyness, and it is something that I can’t do much about</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2) I can change how outgoing I appear in social situations, but I can’t change my true level of shyness</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3) My shyness is something about me that I can’t change very much</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4) I can change aspects of my shyness if I want to</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5) How shy I am changes as I go through life</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6) My shyness is not fixed, but changes over time</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
**SPS-SF**

*Instructions: Indicate the degree to which you feel the statement is characteristic or true of you*

1. I get nervous that people are staring at me as I walk down the street.
   
   Not at all     Slightly     Moderately     Very     Extremely

2. I fear I may blush when I am with others.
   
   Not at all     Slightly     Moderately     Very     Extremely

3. I would get tense if I had to sit facing other people on a bus or a train.
   
   Not at all     Slightly     Moderately     Very     Extremely

4. It would make me feel self-conscious to eat in front of a stranger at a restaurant.
   
   Not at all     Slightly     Moderately     Very     Extremely

5. I get tense when I speak in front of other people.
   
   Not at all     Slightly     Moderately     Very     Extremely

6. I worry my head will shake or nod in front of others.
   
   Not at all     Slightly     Moderately     Very     Extremely
Thinking about your goals and expectations for therapy, please pick one number for each question, anywhere from 1 (disagree strongly) to 7 (agree strongly):

<table>
<thead>
<tr>
<th></th>
<th>Disagree strongly</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) I think there will be a lot of progress in therapy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>2) I think therapy will help me handle the problem much better</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>3) I doubt the problem will be much better when therapy ends</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

Thinking about your goals and expectations for therapy, please pick one number for the following question, anywhere from 1 (the same) to 7 (much better):

<table>
<thead>
<tr>
<th></th>
<th>The same</th>
<th>Much better</th>
</tr>
</thead>
<tbody>
<tr>
<td>4) Compared to when therapy began, I think the problem at the end of therapy will be:</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
**SPSBS-LL**

**Instruction:** Please circle a response for each item to indicate how frequently you used each of the following behaviors in social situations.

1. Looking away from or avoiding eye contact with the person with whom you are interacting.
   - Never
   - Occasionally
   - Often
   - Usually

2. Speeding up your speech, talking quickly and without pauses.
   - Never
   - Occasionally
   - Often
   - Usually

3. Shortening your speech, drastically reducing what you have to say.
   - Never
   - Occasionally
   - Often
   - Usually

4. Avoiding attracting attention to yourself.
   - Never
   - Occasionally
   - Often
   - Usually

5. Getting a seat as hidden as you can.
   - Never
   - Occasionally
   - Often
   - Usually

6. Pretending you are not interested or you are distant from what is happening.
   - Never
   - Occasionally
   - Often
   - Usually

7. Limiting yourself to being a passive spectator of a situation.
   - Never
   - Occasionally
   - Often
   - Usually

8. Pretending you did not see someone.
   - Never
   - Occasionally
   - Often
   - Usually

9. Walking with your head down.
   - Never
   - Occasionally
   - Often
   - Usually

10. Increasing the distance between yourself and the person you are talking to.
    - Never
    - Occasionally
    - Often
    - Usually
**TSBI**

*Respond to each statement by choosing how much the statement is characteristic or uncharacteristic of you.*

1. I would describe myself as socially unskilled.
   - 0: Not at all characteristic of me
   - 1: Not very characteristic of me
   - 2: Slightly characteristic of me
   - 3: Fairly characteristic of me
   - 4: Very much characteristic of me

2. I frequently find it difficult to defend my point of view when confronted with the opinions of others.
   - 0: Not at all characteristic of me
   - 1: Not very characteristic of me
   - 2: Slightly characteristic of me
   - 3: Fairly characteristic of me
   - 4: Very much characteristic of me

3. I would be willing to describe myself as a pretty “strong personality.”
   - 0: Not at all characteristic of me
   - 1: Not very characteristic of me
   - 2: Slightly characteristic of me
   - 3: Fairly characteristic of me
   - 4: Very much characteristic of me

4. When I work on a committee I like to take charge of things.
   - 0: Not at all characteristic of me
   - 1: Not very characteristic of me
   - 2: Slightly characteristic of me
   - 3: Fairly characteristic of me
   - 4: Very much characteristic of me

5. I usually expect to succeed in the things I do.
   - 0: Not at all characteristic of me
   - 1: Not very characteristic of me
   - 2: Slightly characteristic of me
   - 3: Fairly characteristic of me
   - 4: Very much characteristic of me

6. I feel comfortable approaching someone in a position of authority over me.
   - 0: Not at all characteristic of me
   - 1: Not very characteristic of me
   - 2: Slightly characteristic of me
   - 3: Fairly characteristic of me
   - 4: Very much characteristic of me
7. I enjoy being around other people and seek out social encounters frequently.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me

8. I feel confident in my social behavior.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me

9. I feel I can confidently approach and deal with anyone I meet.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me

10. I would describe myself as happy.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me

11. I enjoy being in front of large audiences.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me

12. When I meet a stranger, I often think that he or she is better than I am.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me

13. It is hard for me to start a conversation with strangers.

Not at all characteristic of me
Not very Slightly Fairly Very much characteristic of me
14. People seem naturally to turn to me when decisions have to be made.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all characteristic of me</td>
</tr>
<tr>
<td>1</td>
<td>Not very characteristic of me</td>
</tr>
<tr>
<td>2</td>
<td>Slightly characteristic of me</td>
</tr>
<tr>
<td>3</td>
<td>Fairly characteristic of me</td>
</tr>
<tr>
<td>4</td>
<td>Very much characteristic of me</td>
</tr>
</tbody>
</table>

15. I feel secure in social situations.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all characteristic of me</td>
</tr>
<tr>
<td>1</td>
<td>Not very characteristic of me</td>
</tr>
<tr>
<td>2</td>
<td>Slightly characteristic of me</td>
</tr>
<tr>
<td>3</td>
<td>Fairly characteristic of me</td>
</tr>
<tr>
<td>4</td>
<td>Very much characteristic of me</td>
</tr>
</tbody>
</table>

16. I like to exert my influence over other people.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all characteristic of me</td>
</tr>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
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</tr>
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<td>3</td>
<td>Fairly characteristic of me</td>
</tr>
<tr>
<td>4</td>
<td>Very much characteristic of me</td>
</tr>
</tbody>
</table>
ALEXIAN BROTHERS HOSPITAL NETWORK
CONSENT TO PARTICIPATE IN RESEARCH

Title: Altering Shyness Mindset: Enhancing Treatment for Social Performance Anxiety
Principal Investigator: Jason J. Washburn, Ph.D., 1650 Moon Lake Blvd., Hoffman Estates, IL 60169, 847-755-8579
Support by: Alexian Brothers Behavioral Health Hospital, Northern Illinois University

This form requests your consent to be in a research study. You are being asked to take part in a study involving research about people’s beliefs about shyness and their relationship to treatment for social anxiety.

What is the purpose of this research? The purpose is to improve treatment methods for social anxiety disorder (SAD).

What do you have to do? What will be done? If you are randomly selected to be in the experimental group, you will be asked to complete a brief packet of self-report measures, view a brief computer-delivered presentation, and then write a letter to a hypothetical individual. These procedures are non-invasive, will not prolong your treatment, and the presentation is educational in nature. Following the presentation, you will be asked on three occasions (following the presentation, one week after the presentation, and at discharge) to complete another brief packet of self-report measures. If you are randomly selected to be in the control group, you will be asked to complete the aforementioned packets of self-report measures the same number of times as members of the experimental group, however you will not view the computer-delivered presentation or write the letter. Participation in this study, regardless of participation in the presentation, will not alter your usual treatment at ABBHH.

How long will it take, and when is it over? Your participation in the study will be over when you discharge from the program. The presentation will not prolong your treatment in any way. It will take approximately 60 minutes to complete the presentation and letter writing, and 10-20 minutes to complete each packet of self-report measures.

How many people will take part in this research study? About 50 people.

Do you have to do this? Is there an alternative? Your participation is completely voluntary. You may stop at any time, with no negative consequences. Your decision will not affect your treatment or any other element of your time here at ABBHH. Your alternative is to refuse to participate in the research.

What risks will I face by taking part in this research? You may get bored or tired doing the presentation or self-report measures. There is also a chance that some of the questions may deal with sensitive subjects (e.g., anxiety symptoms, feelings about yourself).

How will the researchers protect your privacy? We will remove any information that could be used to identify you after we collect the information. In place of identifying information, we
will use a research number that cannot be used to identify you. After the study is over, we will not be able to connect your name or other personal information to the research number.

**How could I benefit by taking part in the research?** Participating may help us improve treatment services in the future, both at ABBHH and elsewhere. Also, it is possible that the presentation may benefit your treatment.

**AUTHORIZATION TO USE AND DISCLOSE INFORMATION FOR RESEARCH PURPOSES**
Federal regulations give you certain rights related to your personal health information. Personal health information is any information that is collected about your health, such as your medical history. You have the right to know who may get this information and why. We must get your authorization (permission) to use or give out your personal health information.

**What information may be used and given to others?** The following information will be collected and used for this research:

- Your name and medical record number
- Your demographic information (e.g., age, gender, race)
- Information related to diagnosis and treatment of a mental health or substance abuse condition

**Why is your personal information being used?** Your name is used on this form only. Your medical record number will be used to assign your research number. Information on diagnoses and treatment of a mental health or substance use conditions will be collected for purposes of this research.

**Who may use and give out information about you? Who might get this information?** Dr. Washburn and his research team will use this information. Your information may also be shown to the Alexian Brothers Hospital Network Institutional Review Board (ABHN IRB) to make sure your rights are protected. The ABHN IRB is a group of people who perform independent reviews of research as required by federal regulations. Finally, your de-identified information will be used by Michael Gillen for his doctoral dissertation in clinical psychology.

**How long will the researchers be able to use or disclose your personal health information?**

**Can I change my mind and stop giving permission?** We will stop using your medical record number after we have collected all the information. Your authorization for use of your personal health information will never expire unless you change your mind. You may stop giving permission (and end the research study) by writing to Dr. Washburn at the address on the first page. Even if you end your permission, the researcher may use your personal information that was collected prior to you stopping permission. Also, if you end your permission, your de-identified information will still be shared with Michael Gillen, a graduate student at Northern Illinois University, for the purposes of his dissertation study.
Who can I contact about this research? If you have any questions or concerns, or if you want to quit taking part in the study, call Dr. Jason Washburn, the Principal Investigator at 847-755-8579. His address is 1650 Moon Lake Blvd., Hoffman Estates, IL 60169.

For questions about your rights as a research participant, or if at any point during the study, you feel you have been inadequately informed of the risks, benefits, or alternatives or encouraged to continue in the study beyond your wish to do so, you may call Joan Hardman, Registered Pharmacist, at 847-981-3609, Co-Chairperson, Alexian Brothers Hospital Network (ABHN) Institutional Review Board. The Institutional Review Board at ABHN is an independent committee established to protect the rights of research participants. If you have questions or concerns about your privacy rights, contact Jerry Burgess, Corporate Compliance Officer for the Alexian Brothers Hospital Network at 847-385-7150.

Do not sign this form unless you have had a chance to ask questions and have received satisfactory answers to all of your questions. If you agree to participate in this research study, you will receive a signed copy of this consent form for your records.

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CONSENT

I have had the chance to ask questions about this research study and my participation in it and I am satisfied with the answers. By signing, I agree to participate voluntarily in this research study examining the exposure and responsive prevention treatment. I also understand that I have the option to refuse to participate at any time. By signing, I am saying that I have read this form (or it has been read to me). I authorize the use and disclosure of my health information to the parties listed in the authorization section of this form for the purposes described above.

ABBHH STAFF CERTIFICATION

Staff Person Conducting Informed Consent Discussion: I certify that I have explained to the above individual the nature and purpose, the potential benefits and possible risks associated with participating in this research, have answered any questions that have been raised, and have witnessed the above participant’s signature.

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Principal Investigator: I certify that the patient is eligible for the research study and that the informed consent process was conducted.

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Debriefing Form
Shyness Mindset and Social Anxiety Study

Thank you very much for taking time to complete this experiment. The purpose of this study is to better understand how shyness mindset, which refers to whether or not one thinks of his or her shyness as changeable, influences the treatment of social anxiety disorder symptoms. Specifically, this study examined how inducing a view of shyness as changeable may improve the treatment of social performance anxiety (e.g., speaking in front of people, eating in front of others). The information you have provided, when combined with information from other participants, will help us to better understand these issues.

Your responses to the questionnaires are confidential. The questionnaires that you completed are identified by a participant number, which is the same participant number that is on your consent form. This consent form with your name will be kept separate from the rest of your data. Only the research team will have access to the data. No other identifying information is present on the questionnaires you completed. If for some reason the procedures of this experiment have caused you to feel distressed, please discuss this with your therapist here at Alexian Brothers Behavior Health Hospital (ABBHH) prior to discharge.

Your participation in the study is greatly appreciated. If you have any further questions, please feel free to contact either Dr. David Valentiner (815-753-7086; dvalentiner@niu.edu) or Michael Gillen (z1548123@students.niu.edu) at the Department of Psychology, Northern Illinois University; Dr. Valentiner is the faculty supervisor for Mr. Gillen. Additionally, you may contact Dr. Jason Washburn (847-755-8579) at ABBHH.

If you would like information about the results of this research, or would like to share comments or suggestions, or ask questions about this study, feel free to contact Dr. Valentiner.

You are welcome to keep a copy of this form for your records.