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Pre-treatment shyness mindset predicts less reduction of social anxiety during exposure therapy☆

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ABSTRACT

This study examined the moderating role of shyness mindset on the reduction of social anxiety during exposure-based treatment. Participants ($N = 60$) in an intensive outpatient program for anxiety disorders were assessed at pre- and post-treatment. Social performance anxiety decreased dramatically during treatment, but the amount of decrease differed as a function of pre-treatment shyness mindset. At one standard deviation above the mean on both the social performance anxiety and shyness mindset measures, an average reduction of 15 points on the social performance anxiety measure was observed. At one standard deviation above the mean on the social performance anxiety measure and one standard deviation below the mean on the shyness mindset measure, an average reduction of 27 points on the social performance anxiety measure was observed. These results suggest that targeting shyness mindset during exposure-based treatments for social anxiety disorder might increase the effectiveness of treatment for individuals with a high shyness mindset.

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Shyness mindset, the belief that shyness is fixed versus malleable, is a metacognitive belief that is proposed to affect socially anxious individual's motivation to engage in social behaviors, including those behaviors that maintain versus modify shyness. Research on shyness mindset (Beer, 2002; Valentiner, Mounts, Durik, & Gier-Lonsway, 2011) has examined the psychological and social consequences of shyness mindset using nonclinical samples, but to date there are no published studies using clinical samples. The current study examined whether shyness mindset reduces the effectiveness of an exposure-based treatment for reducing social anxiety symptoms.

The construct of shyness mindset represents the application of implicit mindset theory (Dweck, 2006) to the domain of inhibited social behavior. Implicit mindset theory has been studied most extensively in the domain of intelligence and academic achievement. High scores on an intelligence mindset scale indicates beliefs that intelligence is fixed (i.e., having a fixed intelligence mindset). Low scores on an intelligence mindset scale indicates beliefs that intelligence is malleable (i.e., having a growth intelligence mindset). A fixed versus growth mindset has been found to be associated with differences in learning motivation, learning behavior, and learning outcomes (Blackwell, Trzesniewski, & Dweck, 2007, Study 1; Mangels, Butterfield, Lamb, Good, & Dweck, 2006). Interventions that changed intelligence mindset resulted in changes in learning outcomes (Blackwell et al., 2007, Study 2). Mindset theory has also been applied to other domains (e.g., morality: Kray & Haselhuhn, 2007; body weight: Burnette, 2010; see Dweck, 2006, for a review). One application of mindset theory, in the domain of inhibited social behavior, appears to be particularly promising.

Beer (2002) was the first to propose the construct of shyness mindset. She reports that the combination of high levels of shyness and low levels of shyness mindset predicted a greater preference for learning social skills (Study 1). In addition, the combination of high levels of both shyness and shyness mindset predicted especially high levels of social avoidance (Beer, 2002, Study 2), state anxiety in social situations (Beer, 2002, Study 3), and negative perceptions by others (Beer, 2002, Study 3). Beer's (2002) studies provide good evidence that shyness mindset is associated with the social behaviors and consequences likely to be involved with the maintenance of shyness.

Valentiner et al. (2011) conducted a study that examined the role of shyness mindset in the maintenance of social anxiety during the first year of college. Shyness mindset, measured at the beginning of college, moderated the stability of social performance anxiety during the subsequent seven months. At high levels of

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shyness mindset (one standard deviation above the mean on the shyness mindset measure), social performance anxiety appeared to be almost completely stable during the first seven months of college. At low levels of shyness mindset (one standard deviation below the mean on the shyness mindset measure), social performance anxiety was less stable and declined substantially during those first seven months of college.

Of note, the moderating role of shyness mindset was found for social *performance* anxiety, but not for social *interaction* anxiety (Valentiner et al., 2011). Although these two dimensions of social anxiety are highly correlated, they are distinct (Carter & Wu, 2010; Hook, Valentiner, & Connelly, 2013). Because social performance anxiety appears to involve relatively more acute anxiety reactions, it may involve more circumscribed associative networks in memory and more discrete cognitive appraisal processes. Social interaction anxiety may in fact be less malleable; it is often thought of as a dispositional variable. In addition to being specific to social performance anxiety, the moderating role of shyness mindset appeared to be partially mediated by college belongingness, suggesting that shyness mindset's more distal effects are likely mediated by the more proximal motivational and behavioral variables believed to maintain inhibited social behavior. The findings from the Valentiner et al. (2011) study suggest that an intervention program that targets shyness mindset might take advantage of the naturally occurring social challenges associated with the beginning of college.

Another context that presents an even greater challenge to socially anxious individuals is that of exposure therapy for social anxiety. Exposure-based treatments (e.g., Clark & Wells, 1995) typically require that patients being treated for social anxiety confront their social fears *in vivo*, and to engage in new social behaviors while doing so. Although exposure-based treatments are able to substantially reduce social anxiety, it is not known whether shyness mindset might inhibit the effectiveness of these treatments in the same way that it appears to inhibit the natural reduction in social anxiety that takes place during the transition to college. The current study examined this possibility. The current study also examined whether the moderating role of shyness mindset is specific to social performance (versus interaction) anxiety.

1. Methods

1.1. Participants

Participants were 60 patients in an intensive outpatient anxiety disorder treatment or partial hospitalization program (approximately half from each program). The primary diagnosis for these patients was an anxiety disorder, and it was unaccompanied by diagnoses of psychotic disorder or an active (untreated) substance use disorder. The sample was 74% female and 97% Caucasian/White. Sixty-seven percent of the sample was never married and 32% married or living with a significant other. Fifteen percent of the sample had not completed High School, 49% had a High School diploma but not college degree, and 36% had at least an Associates degree. The mean age was 28.6 (SD = 13.2; range from 13 to 72) years. Many of these patients (approximately 80%) were taking medications for anxiety throughout the course of exposure therapy. Patients were strongly encouraged to not take prn anxiety medications during treatment, and many patients worked toward reducing or discontinuing their anxiety mediations during treatment.

Primary diagnoses of participants were: 43% obsessive compulsive disorder (OCD), 16% generalized anxiety disorder (GAD), 10% social anxiety disorder (SAD), and 8% panic disorder with or without agoraphobia (PD). Many of these patients (83%) were diagnosed with multiple disorders. Forty-eight percent of the sample had Social Interaction Anxiety Scale (see below) scores highly indicative of SAD (Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006).

1.2. Measures

At the initial assessment (i.e., pre-treatment), each patient completed pencil-and-paper questionnaires and the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). The MINI, a structured clinical interview used to assess 17 Axis I disorders, was administered by master and doctoral level clinicians who had prior experience in conducting the interview. The MINI has shown adequate convergence with other structured clinical interviews (with kappas ranging from .50 to .84; Sheehan et al., 1998). Participants then completed a pre-treatment questionnaire packet that included a demographic questionnaire and the Shyness Mindset Scale (SMS; Valentiner et al., 2011). The SMS contains four items (e.g., "Your level of shyness is something about you that you can't change very much") that were rated on a five-point scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). The SMS showed adequate internal consistency (α's = .74 and .72, at Time 1 and Time 2, respectively). The pre-treatment questionnaire packet also included the Social Phobia and Social Interaction Anxiety Scales (SPS and SIAS; Mattick & Clarke, 1998). The SPS and SIAS are 20-item scales believed to assess social performance and social interaction anxiety, respectively. The SIAS was scored using only the 17 straightforward worded items (following Rodebaugh, Woods, & Heimberg, 2007), but prorated to compare to the cut-off of 34 established to detect social anxiety disorder (Rodebaugh et al., 2006). The SPS and SIAS demonstrated good internal consistency at pre- (α's = .93 and .95, respectively) and post-treatment (both α's = .95). Patients completed a similar questionnaire packet post-treatment (including the SMS, SPS, and SIAS), usually during or just before the final treatment session.

1.3. Treatment

The intensive outpatient treatment program and partial hospitalization program took place five days per week. For these 60 patients, the modal length of stay in the program was three weeks (Mean = 3.6, SD = 2.0). Exposure therapy was conducted for approximately 2 h per day. The stimuli associated with primary diagnoses were typically targeted first and progressed to additional stimuli (e.g., those associated with secondary diagnoses) during the course of treatment. Exposure and response prevention was used to treat OCD, interoceptive exposure was used to treat PD, and worry exposure was used to treat GAD. For patients with primary or secondary diagnoses of SAD or significant social anxiety symptoms, *in vivo* exposure was used whenever possible, supplemented by imaginal exposure as needed. Exposures included instructions to drop safety behaviors, and were construed as opportunities to reevaluate both likelihood and cost overestimation. Therapy was delivered by graduate students completing clinical practica, and masters and doctoral level staff therapists, under the supervision of the second and fifth authors.

2. Results

The means and standard deviations of, and correlations among, the study variables are presented in Table 1. Shyness mindset at pre- and post-treatment were significantly correlated, $r = .46$, $n = 58$, $p < .01$ (two-tailed tests with alpha = .05 were used here and throughout), and showed a significant but modest decrease from pre- to post-treatment; $t(57) = 3.74$, $p < .01$. The social performance and social interaction anxiety measures showed substantial rank-order stability, both r's = .70, both p's < .01. Social performance and