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The Relation Between Mindfulness and Fear of Negative Evaluation Over the Course of Cognitive Behavioral Therapy for Social Anxiety Disorder

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Abstract

Objectives—This study examined the relation between mindfulness and fear of negative evaluation over the course of nonmindfulness based cognitive-behavioral therapy (CBT) for social anxiety disorder (SAD). We expected that higher levels of mindfulness would be associated with a more positive response to treatment.

Method—This study is a secondary report from a randomized controlled trial in which participants ($N = 65$) diagnosed with SAD were randomly assigned to receive 8 weeks of 1 of 2 manualized treatments (exposure group therapy, $n = 33$; or virtual reality exposure therapy, $n = 32$) either immediately or following an 8 week waiting period.

Results—Fear of negative evaluation decreased following treatment and was negatively related to mindfulness throughout treatment and follow-up. Mindfulness did not moderate treatment outcome.

Conclusions—These findings indicate that while mindfulness is related to fear, it is not a moderator of symptom reduction in nonmindfulness-based treatment. Implications for treatment and future research are discussed.

Keywords

social phobia; mindfulness; cognitive behavior therapy; treatment; exposure public speaking

Mindfulness is negatively related to a wide range of psychopathology (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007; Smalley et al., 2009; Wupperman, Neumann, Whitman, & Axelrod, 2009) and mindfulness training has alleviated symptoms across a range of problems (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). One recent study showed that the inclusion of mindfulness training in cognitive-behavioral therapy (CBT) for individuals diagnosed with social anxiety disorder (SAD) was beneficial (Piet, Hougaard, Hecksher, & Rosenberg, 2010), but also showed that nonmindfulness-based treatment was equally efficacious. The current study

takes a different perspective by examining whether people with higher levels of mindfulness benefit more from CBT, when the therapy does not explicitly target mindfulness.

The potential influence of mindfulness on exposure therapy for anxiety disorders has recently been reviewed (Treanor, 2011), and some empirical research is suggestive of how mindfulness may facilitate traditional CBT treatment for SAD. For example, mindfulness training is associated with the cultivation of sustained attention (Rani & Rao, 1996; Valentine & Sweet, 1999), and thus mindfulness may combat maladaptive attentional processes well known to be associated with SAD, such as hypervigilance for negative social cues, and problematic self-focused attention (Boögels & Mansell, 2004). Mindfulness may also create a greater awareness of distressing internal experience, which may increase one's ability to evaluate thoughts in the context of cognitive restructuring (Kohlenberg, Hayes, & Tsai, 1993). Furthermore, mindfulness may facilitate exposure therapy through increased contact with current experience and willingness to experience negative emotional content (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). However, the potential affect of mindfulness on CBT for people with SAD has not been tested.

The current study is a secondary report of a controlled trial, which examined the relation between self-report mindfulness and levels of social anxiety in a clinical sample with a primary diagnosis of SAD before treatment, after treatment, and at 3-month follow-up, as well as the relation between mindfulness and treatment response. We hypothesized that mindfulness would be inversely associated with fear of negative evaluation at each time point, and that higher levels of mindfulness would be associated with a better treatment response.

Method

Participants

Participants ($N = 65$) completed the procedures of this study as part of a randomized controlled trial comparing virtual reality exposure (VRE) therapy (Anderson, Zimand, Hodges, & Rothbaum, 2005), exposure group therapy (EGT; Hofmann, 2004), and a waitlist control group. After the waitlist period, participants were randomly assigned to one of the active treatments. There were no significant differences between the waitlist control and immediate treatment groups on any of the study measures. The data from this study come from all those who completed treatment (including those who completed treatment after waitlist). Participants were recruited broadly through newspaper advertising, flyers, and referrals from local area professionals and other study participants. Of the 110 people screened for this study, 26 dropped out, 18 were excluded, and one participant had insufficient data for our analysis. Fifteen participants were randomized to the waitlist group and received treatment after the 8-week wait period. Eligible participants met Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria for SAD, with public speaking as their most feared situation ($n_{\text{Generalized}} = 32$, $n_{\text{Non-generalized}} = 33$). Participants on psychoactive medication were required to have been stable for at least 3 months. Exclusion criteria for the study included a history of psychosis, mania, seizures, current suicidal ideation, alcohol or substance dependence, or an inability to tolerate the

virtual reality headset device. This was a clinical sample of treatment-seeking adults diagnosed with SAD.

The majority of participants were female ($n = 40$, 61%). Participants self-identified as African American ($n = 18$, 28%), Caucasian ($n = 35$, 54%), Hispanic ($n = 3$, 5%), Asian American ($n = 2$, 3%), and Other ($n = 7$, 10%). The majority of participants had completed college (66%), with 14.4% completing graduate school; 52% were married and 46% reported an annual income of greater than \$50,000 a year. The mean age was 40 years (standard deviation [SD] = 12).

Measures

Structured Clinical Interview for the DSM-IV (SCID; Spitzer, Gibbon, Skodol, Williams, & First, 2002)—The SCID is a structured diagnostic interview used to determine the presence of a psychological disorder found in the DSM-IV. For the purposes of our study, trained doctoral students in clinical psychology administered the SCID to assess the presence of SAD. A licensed clinical psychologist reviewed a randomly selected subset of the assessments ($n = 15$) and provided her own ratings based on her review of the tapes. Interrater reliability for the primary diagnosis was 100%.

Brief Fear of Negative Evaluation (BFNE; Leary, 1983)—The BFNE is a 12-item self-report questionnaire that measures fear of negative evaluation by others. It is derived from Watson and Friend's (1969) original measure of this construct, with which it is highly correlated ($r = .96$; Leary, 1983). Items are rated on a 5-point scale, and scores range from 12 to 60, with higher scores representing increased evaluative concerns. The BFNE shows excellent psychometric properties among clinical samples of adults with social anxiety, including test-retest reliability ($r = .94$), internal consistency ($\alpha = .89-.97$), convergent validity, and discriminant validity, and is sensitive to change as a result of treatment (Collins, Westra, Dozois, & Stewart, 2005).

Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003)—The MAAS is a 15-item, single-factor, self-report measure assessing individual differences in the frequency of mindful states over time. Participants rate the degree to which they function without awareness in daily life. (e.g., "I rush through activities without being really attentive to them" and "I drive places on automatic pilot and then wonder why I went there"). Respondents indicate how often they have the experiences referenced by each item using a 6-point Likert-type scale, anchored from 1 (*almost always*) to 6 (*almost never*). Authors report internal consistency alphas ranging from .82 to .87. The MAAS has theoretically consistent relationships to neural activity (Creswell, Way, Eisenberger, & Lieberman, 2007) and is a known mediator of outcome as a result of mindfulness based interventions (Nyklík & Kuijpers, 2008).

Procedure

After an initial phone screen, potential participants completed an in-person assessment in which informed consent was obtained and initial assessments were administered. The assessments included the SCID interview and a battery of questionnaires, including the

BFNE and MAAS. After enrollment, participants were randomized to one of two active treatments or waitlist. Following the 8-week waiting period, participants originally assigned to waitlist were randomly assigned to treatment. Self-report questionnaires were also given at posttreatment and at 3-month follow-up.

The treatments were both exposure-based cognitive-behavioral therapies administered over 8 weekly sessions and conducted according to a treatment manual. Treatment was administered by five trained study therapists; two senior therapists were licensed psychologists with prior experience implementing manualized CBT (including *virtual reality*) and three junior therapists were doctoral students. Each therapist administered both treatments.

Treatments were designed to be as similar as possible, with the exception of the mechanism by which exposure therapy was delivered. Both treatments specifically targeted public speaking fears and sought to address specific aspects of SAD identified in psychopathology literature, including self-focused attention, perceptions of self and others, perceptions of emotional control, rumination, and realistic goal setting for social situations. Both treatments focused on developing the treatment rationale and rapport during the first session and relapse prevention during the final session. Neither treatment targeted mindfulness.

During VRET, participants were exposed to different virtual scenarios related to public speaking through a head mounted display. The virtual environments included a podium, on which a patient's speech could be downloaded, and a virtual audience, made up of images of real individuals superimposed in a virtual scenario. This scenario either consisted of a small group (N = 5) of individuals in a conference room setting, a classroom setting (N = 35+), or a large group in an auditorium (N = 100+). Individual fear hierarchies were created for each participant based on the available virtual environments.

During EGT, exposure to public speaking was conducted in vivo, with other group members serving as the audience. Participants gave speeches to the group during all but the first and last session. During exposures, videotape feedback was utilized, and group members were asked to provide feedback. During one session, exposures were conducted outside the group room, utilizing social mishaps.

Ratings of adherence in delivering the protocols were provided by the developers of the respective treatments for a randomly selected subset of videotaped sessions (14%). Compliance was quite good for each treatment, with 92% and 93% of the essential elements of the protocol being completed, and one infraction for each treatment across all sessions reviewed.

Data Analysis

Hierarchical linear modeling (HLM) was used to evaluate the association of mindfulness towards changes in fear of negative evaluation during the course of treatment and across treatment groups. HLM partitions variability in dependent variables into variance attributed to intraparticipant differences, such as change over time and variance attributed to interparticipant differences, such as treatment condition. This method has several advantages

over regression approaches for assessing longitudinal outcomes in that it violates fewer assumptions and is better able to handle missing data (Singer & Willett, 2003). The current study included level one fixed effects for intercept slope (rate of change), *mindfulness* scores, and an interaction between slope x *mindfulness*. The fixed effect for slope provided a measurement of treatment response defined as the decrease in *fear* scores during treatment and follow-up. The fixed effect for mindfulness scores provided a measure of the association between fear and mindfulness across time points. Finally, the interaction between slope and mindfulness determined the extent that treatment response was moderated by mindfulness. Treatment condition was included as a level two fixed effect for slope, mindfulness, and the slope x mindfulness interaction. Models were computed with restricted maximum likelihood estimation, which has been shown to provide more accurate estimates when using smaller samples.

Results

Descriptive statistics for all variables can be found in Table 1. A series of chi-squares and analyses of variance (ANOVAs) were conducted to assess differences amongst the treatment conditions at pretreatment. These analyses revealed there were no significant differences in the study variables of interest or demographic characteristics across the treatment conditions (gender: $p = 0.51$; age: $p = 0.86$ ethnicity: $p = 0.28$; education: $p = 0.67$; marital status: $p = 0.91$; Income: $p = 0.35$). Paired samples t tests revealed that mindfulness did not significantly change over the course of treatment, $t(62) = .456, p = 0.65$. Mindfulness scores were negatively related to fear of negative evaluation scores at pretreatment ($r = -0.32, p = 0.01$), posttreatment ($r = -0.49, p < 0.01$), and 3-month follow-up ($r = -0.38, p < 0.01$).

The data were fitted to a hierarchical linear model that included fixed effects for time, mindfulness scores, and a mindfulness x time interaction (Table 2). The level 1 model indicated that fear scores declined during the course of treatment and the 3-month follow-up period ($\gamma_{20} = -4.02, p < 0.01$). There was a large effect for treatment, with 33% of the variance in fear scores being accounted for by change over time. Furthermore, controlling for time, mindfulness scores were negatively related to fear scores ($\gamma_{30} = -0.25, p < 0.01$), with mindfulness scores accounting for 5% of the variance in fear of negative evaluation scores. Thus, mindfulness was negatively related to SAD across treatment and follow-up. However, the interaction between mindfulness scores and slope was not significant ($\gamma_{30} = -0.05, p = 0.24$), indicating that response was not moderated by mindfulness scores. The interaction term accounted for 2% of the variance in fear of negative evaluation scores. The level 2 model indicated that the relation between mindfulness and fear scores did not differ across treatment conditions.

Discussion

The primary hypothesis for the current study, that there would be a moderating effect between mindfulness and symptoms of SAD in which individuals with higher levels of mindfulness would show greater treatment response than those with lower levels of mindfulness, was not supported. One possible explanation is that this clinical sample did not possess sufficient levels of mindfulness to affect treatment gains. However, mindfulness

scores in the present sample are higher than other clinical samples (mean [M] = 3.68, standard deviation [SD] = .66; Evans et al., 2008) and are more equivalent to a nonclinical sample (M = 4.22, SD = .63; Brown & Kasser, 2005). The lack of a moderating effect may be explained by the fact that mindfulness did not increase as a result of treatment. These findings suggest that standard CBT alone does not affect mindfulness levels in SAD. Finally, null results may be due to insufficient power to detect the small effect typically associated with interaction terms (Heo, Kim, Xue, & Kim, 2010).

Our findings may also be limited by our measure of mindfulness. The MAAS conceptualizes mindfulness primarily as attention to the present (Brown & Ryan, 2003). However, others suggest that it is a measure of general inattentiveness (Van Dam, Earleywine, & Borders, 2010), and it is related to exaggerated lapses of attention on behavioral tasks (Schmertz, Robins, & Anderson, 2009). The MAAS also does not assess nonjudgmental acceptance of experience, often cited in the operational definition (Baer et al., 2004). It is possible that this aspect of mindfulness may better predict an individual's ability/likelihood to benefit from treatment, especially exposure-based treatments in which nonjudgmental acceptance could potentially better facilitate emotional processing and extinction learning. This is an area for future research.

Our second hypothesis, that mindfulness would be negatively related to fear of negative evaluation over the course of treatment and follow-up, controlling for treatment response, was supported. These results are consistent with literature demonstrating a negative relation between mindfulness and levels of pathology in clinical samples (Smalley et al., 2009; Wupperman et al., 2009). Our study is the first to show that this relation endures even after symptoms decrease after CBT. These results offer the intriguing possibility that targeting mindfulness may potentially improve CBT treatment for SAD. The finding urges further study regarding how mindfulness may affect this standard therapy and how targeting such shared variance may improve treatment outcomes for SAD.

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Table 1

Descriptive Statistics for Each Treatment Condition

	Virtual reality	Group
<i>Pretreatment</i>		
Fear of Negative Evaluation	41.72 (10.65)	43.97 (-7.64)
Mindful Attention Awareness Scale	4.12 (-1.05)	3.95 (1.07)
<i>Posttreatment</i>		
Fear of Negative Evaluation	37.78 (-9.31)	35.13 (-6.66)
Mindful Attention Awareness Scale	4.03 (0.97)	4.03 (0.86)
<i>3-month follow-up</i>		
Fear of Negative Evaluation	37.34 (-8.39)	34.22 (-9.69)
Mindful Attention Awareness Scale	4.17 (1.02)	4.36 (0.83)

Note. Values in parentheses are standard deviations. Virtual reality, n = 32; group, n = 33.

Table 2

Fixed Effects for Model Examining Slope, Mindfulness, and a Slope X Mindfulness Interaction

Parameter		Fear of Negative Evaluation-Brief Form	<i>p</i> -value
<i>Fixed effects</i>			
Pretreatment	γ_{00}	40.17	<0.001
Treatment rate of change	γ_{10}	-4.01	<0.001
Difference between virtual reality and group	γ_{11}	1.49	0.300
Mindfulness	γ_{20}	-0.23	0.007
Difference between virtual reality and group	γ_{21}	0.05	0.678
Interaction between mindfulness and treatment rate of change	γ_{30}	-0.05	0.433
Difference between virtual reality and group	γ_{31}	0.06	0.537