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Implicit associations in social anxiety disorder: The effects of comorbid depression☆

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ABSTRACT

Implicit associations of the self to concepts like "calm" have been shown to be weaker in persons with social anxiety than in non-anxious healthy controls. However, other implicit self associations, such as those to acceptance or rejection, have been less studied in social anxiety, and none of this work has been conducted with clinical samples. Furthermore, the importance of depression in these relationships has not been well investigated. We addressed these issues by administering two Implicit Association Tests (IATs; Greenwald, McGhee, & Schwartz, 1998), one examining the implicit association of self/other to anxiety/calmness and the other examining the association of self/other to rejection/acceptance, to individuals with generalized social anxiety disorder (SAD, $n = 85$), individuals with generalized SAD and a current or past diagnosis of major depressive disorder or current dysthymic disorder ($n = 47$), and non-anxious, non-depressed healthy controls ($n = 44$). The SAD and SAD-depression groups showed weaker implicit self-calmness associations than healthy controls, with the comorbid group showing the weakest self-calmness associations. The SAD-depression group showed the weakest implicit self-acceptance associations; no difference was found between non-depressed individuals with SAD and healthy controls. Post hoc analyses revealed that differences appeared to be driven by those with current depression. The SAD-only and SAD-depression groups did not differ in self-reported (explicit) social anxiety. The implications of these findings for the understanding of SAD-depression comorbidity and for the treatment of SAD are considered.

1. Introduction

Social anxiety disorder (SAD) and major depressive disorder (MDD) are two of the most common mental disorders in the US (Kessler, Chiu, Demler, Merikangas, & Walters, 2005), with 12-month prevalence rates of 6.8% and 6.7%, respectively (Kessler, Berglund, et al., 2005). SAD and MDD often occur together, and SAD precedes MDD in approximately 70% of individuals with both disorders (Kessler, Stang, Wittchen, Stein, & Walters, 1999; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). In one study, individuals with SAD were at 3.5 times higher risk than those without to have a subsequent depressive disorder (Stein et al., 2001). In another study that followed adolescents into adulthood, the risk for depression was 2-fold in individuals with SAD compared to those without SAD and almost 3-fold compared to those with no anxiety disorder (Beesdo et al., 2007). Increasing our knowledge of depression comorbidity among persons with SAD is important because anxiety-depression comorbidity is associated with more chronic distress, greater risk of relapse, and more impaired psychosocial functioning than when the disorders present independently (e.g., Brown, Schulberg, Madonia, Shear, & Houk, 1996; Lewinsohn, Rohde, & Seeley, 1995; Reich et al., 1993; Ruscio et al., 2008). One particular focus is understanding the role of information processing biases in SAD with and without depression.

1.1. Attentional biases in social anxiety disorder

Cognitive-behavioral models of SAD (e.g., Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2010; Hofmann, 2007; see Wong, Gordon, & Heimberg, 2014, for a review and comparison of

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cognitive-behavioral models of SAD) posit that dysfunctional information processing contributes to the etiology and maintenance of the disorder. In fact, a large body of research documents the occurrence of one type of dysfunctional information processing, attentional bias toward social threat stimuli, in SAD (for a review, see Morrison & Heimberg, 2013; for a review of attentional bias toward threat stimuli in the anxiety disorders more generally, see Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van Ijzendoorn, 2007). However, limited research suggests that the presence of depressive symptoms among individuals with social anxiety/SAD may alter the nature of this response.

One study looked at the impact of depressive symptoms on attentional bias among socially anxious individuals using an emotional Stroop task (Grant & Beck, 2006). Socially anxious individuals without depressive symptoms showed greater Stroop interference for threat words relative to neutral and positive words. However, the socially anxious-dysphoric group did not exhibit this bias. To our knowledge, only two other studies have addressed this problem (LeMoult & Joormann, 2012; Musa, Lépine, Clark, Mansell, & Ehlers, 2003). Both administered a dot-probe task to individuals with SAD, SAD and a concurrent depressive disorder, and non-patient controls. Musa et al. found results largely consistent with Grant and Beck. Patients with SAD showed the expected bias (i.e., vigilance) toward social threat words. Patients with SAD and concurrent depression showed no such bias and appeared similar to controls. In contrast to the 500 ms threat cue presentation duration employed by Musa et al., LeMoult and Joormann presented threat cues for either 7 ms or 1000 ms. They found evidence of attentional *avoidance* of angry faces in the depressed SAD group compared to the non-depressed SAD group for the supraliminal presentation. However, the meaning of these results is less than clear, given that neither SAD group differed from controls on these trials. In addition, no evidence of attentional bias, either vigilance or avoidance, in either SAD group was detected for subliminally presented angry face cues, nor for positive, sad, or disgust faces at either presentation time.

Taken together, the pattern of results suggests that comorbid depression may nullify, or at least dampen, attentional biases associated with social anxiety at relatively brief exposures. When more time is permitted for stimulus processing, biases may be observed in the comorbid depression group, albeit in the opposite direction. Indeed, Mathews and MacLoed (2005) have suggested that early sensitivity to threat cues apparent in anxiety may by inhibited in depression, in which biases toward mood-congruent information are more commonly observed for stimuli that are presented for longer durations, potentially due to slower, more strategically directed processes such as rumination. Therefore, it appears prudent to consider whether concurrent depressive symptoms or depressive disorder have similar effects on other automatic cognitive biases in individuals with SAD.

1.2. Implicit associations and the Implicit Association Test (IAT)

Implicit associations are another important type of biased cognitive processing that is receiving attention in research on psychopathology. Implicit associations are thought to represent stable memory constructs developed over time that contribute to schemas about the self (Beevers, 2005; Haeffel et al., 2007). The IAT, developed by Greenwald, McGhee, and Schwartz (1998), examines implicit attitudes that someone holds regarding the relationship between a concept or category (e.g., flowers) and an attribute (e.g., goodness). The IAT has been widely used to examine attitudes regarding different racial groups, genders, and sexual orientations (e.g., Devos & Banaji, 2005; Jellison, McConnell, & Gabriel, 2004; Nosek, Banaji, & Greenwald, 2002). During the typical administration of the IAT, participants make a series of response choices involving a concept discrimination (e.g., flowers/insects) and an attribute discrimination (e.g., good/bad). Participants are instructed to respond rapidly with a right key press to items representing one concept and one attribute (e.g., flowers and good) and with a left key press to items from the remaining two categories (e.g., insects and bad). Participants then complete a second task in which key assignments for one of the pairs is switched. IAT response latencies are interpreted in terms of relative association strengths.[1] It is assumed that responses are more rapid when the concept and attribute mapped onto the same key are strongly associated, whereas responses are assumed to be relatively slower when the concept and attribute mapped on the same key are less closely associated.

The use of implicit measures, such as the IAT, may be particularly relevant with socially anxious individuals. Given that individuals with SAD experience heightened self-presentational concerns and fears of others' evaluation, explicit self-report may yield an inaccurate or incomplete picture of their experiences. For example, it is a well-replicated phenomenon that persons with SAD report that they perform more poorly on behavioral tests than do other informants (e.g., Rapee & Lim, 1992; Rodebaugh, Heimberg, Schultz, & Blackmore, 2010; Rodebaugh & Rapee, 2005; Stopa & Clark, 1993). Implicit measures like the IAT may minimize – perhaps even circumvent – self-presentational biases and effects.

1.3. Implicit associations in social anxiety and depression

Several studies have used the IAT to study implicit associations in socially anxious individuals. de Jong (2002) administered the IAT to female undergraduates high and low in social anxiety, using concept categories of self (e.g., I, self) and other (e.g., their, them) and attribute categories of low-esteem (e.g., bad, stupid) and high-esteem (e.g., smart, valuable). Both high and low socially anxious groups performed faster categorizing self with high-esteem words than the reverse category pairings, although a significant interaction effect suggested that this pattern was stronger in the low socially anxious group. Similarly, another study found that high social anxiety participants did not exhibit negative implicit self-esteem; they responded more quickly to self-positive pairings than to self-negative pairings (Tanner, Stopa, & De Houwer, 2006). However, they did respond more slowly to self-positive pairings than those low in social anxiety. Notably, depressive symptoms did not impact IAT performance.

Some researchers have also examined responses to an IAT in which self or other is paired with rejection or acceptance, an area of clear concern to persons with social anxiety. A self-rejection IAT was used by Teachman and Allen (2007) in their study of perceived peer acceptance/rejection and its relationship to implicit and explicit fear of negative evaluation in adolescents. Adolescents more easily associated the self with acceptance than with rejection. Clerkin and Teachman (2010) examined the responses to the same IAT of socially anxious undergraduates to whom they provided training to modify implicit associations. Because all participants were socially anxious, it was not possible to compare their responses to those of a non-anxious sample, but similar to the adolescent sample of Teachman and Allen (2007), they more easily associated the self with acceptance than rejection. However, trained participants demonstrated strengthened self-acceptance

[1] As noted by Pinter and Greenwald (2005), it is important to keep in mind that "the standard interpretation of any IAT measure involves *relative* strengths of associations of the two contrasted concept categories with the two contrasted attribute categories" (p. 75, italics added). Throughout this paper, we will refer to IAT results using simplified descriptors (e.g., flowers-good) to increase readability. However, results are always referring to the relative strength of associations (e.g., flowers-good/insects-bad).