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Adaptive and maladaptive emotion regulation strategies: Interactive effects during CBT for social anxiety disorder

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ABSTRACT

There has been a increasing interest in understanding emotion regulation deficits in social anxiety disorder (SAD; e.g., Hofmann, Sawyer, Fang, & Asnaani, 2012). However, much remains to be understood about the patterns of associations among regulation strategies in the repertoire. Doing so is important in light of the growing recognition that people's ability to flexibly implement strategies is associated with better mental health (e.g., Kashdan et al., 2014). Based on previous work (Aldao & Nolen-Hoeksema, 2012), we examined whether putatively adaptive and maladaptive emotion regulation strategies interacted with each other in the prediction of social anxiety symptoms in a sample of 71 participants undergoing CBT for SAD. We found that strategies interacted with each other and that this interaction was qualified by a three-way interaction with a contextual factor, namely treatment study phase. Consequently, these findings underscore the importance of modeling contextual factors when seeking to understand emotion regulation deficits in SAD.

1. Background

In the past decade, there has been growing interest in understanding emotion regulation difficulties in social anxiety disorder (SAD; e.g., Hofmann, 2010; Hofmann et al., 2012; Kashdan et al., 2014; Kashdan & Steger, 2006; Moscovitch, Suvak, & Hofmann, 2010; Turk, Heimberg, Luterek, & Mennin, 2005). In non-clinical samples, symptoms of social anxiety have been associated with the use of the putatively maladaptive strategies of suppression (e.g., Kashdan & Breen, 2008; McLean, Miller, & Hope, 2007; Perini, Abbott, & Rapee, 2006), experiential avoidance (e.g., Santanello & Gardner, 2007), and rumination/post-event processing (e.g., Brozovich & Heimberg, 2008; Kashdan & Roberts, 2007; Perini et al., 2006). In clinical samples, participants diagnosed with SAD have tended to report making greater use of the putatively maladaptive strategies of expressive suppression, rumination, and experiential avoidance and lesser use of the putatively adaptive strategy of reappraisal than healthy controls (e.g., D'Avanzato, Joormann, Siemer, & Gotlib, 2013; Kashdan et al., 2013). Underscoring the clinical implications of studying the habitual use of emotion regulation strategies in SAD, Moscovitch et al. (2012) have found that patients who responded to CBT exhibited an increase in their habitual use of the putatively adaptive strategy of reappraisal from pre- to mid-treatment assessments (this was not the case for suppression). Similarly, Goldin et al. (2012) have found that, relative to patients with SAD in a wait list control condition, those who underwent CBT showed increased self-efficacy in the use of reappraisal.

Although these studies represent important initial steps in furthering our understanding of emotion regulation deficits in SAD, they are limited in that they have largely consisted of the examination of regulation strategies independently of one another. Consequently, much remains to be understood about the patterns of associations among strategies in the repertoire. Doing so is particularly important in light of a growing understanding that people's ability to flexibility select and implement various strategies from their repertoires in response to varying contextual demands

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is associated with good mental health outcomes (e.g., Aldao, 2013; Bonanno & Burton, 2013; Kashdan & Rottenberg, 2010; Kashdan et al., 2014; Sheppes et al., 2014). Thus, in this investigation, we sought to conduct a broader examination of the repertoire of regulation strategies in SAD by comparing the magnitudes of their associations with symptoms and testing whether they interact with each other in the prediction of such symptoms in the context of CBT.

The framework for this investigation is a growing body of research on emotion regulation strategies and psychopathology that suggests that some emotion regulation strategies (e.g., avoidance, expressive suppression) are ineffective at modifying affect in experimental studies, and seem to be associated with greater levels of psychological symptoms. These strategies have been conceptualized as putatively maladaptive (e.g., Aldao, Nolen-Hoeksema, & Schweizer, 2010; Webb, Miles, & Sheeran, 2012). Conversely, other emotion regulation strategies (e.g., reappraisal, acceptance) are effective at modifying affect in laboratory settings, and seem to have negative associations with clinical symptoms. These strategies have been conceptualized as putatively adaptive (Aldao et al., 2010).

It has been widely assumed that both the *presence* of maladaptive strategies and the *absence* of adaptive strategies put a person at increased risk for psychopathology (e.g. Aldao et al., 2010; Gross & Jazaieri, 2014; Kring & Sloan, 2009). Initial work comparing the associations between symptoms of psychopathology and putatively adaptive and maladaptive strategies suggests these relationships might be of comparable magnitudes. For example, in the validation paper for the emotion regulation questionnaire, the correlation between depressive symptoms and the habitual use of expressive suppression was .25, and the correlation between depressive symptoms and habitual use of reappraisal was −.23 (Gross & John, 2003). Further, these putatively adaptive and maladaptive strategies did not interact with each other in the prediction of symptoms (Gross & John, 2003), suggesting that their effects might be additive.

However, two recent sets of findings call into question both of these assumptions. First, a meta-analytic review suggests that the habitual use of putatively adaptive strategies may have a weaker association with various symptoms of psychopathology (e.g., depression, anxiety, eating disorders, substance abuse) than the habitual use of putatively maladaptive strategies (*d* for adaptive = −.21; *d* for maladaptive = .40; Aldao et al., 2010). In other words, the relationship between strategies and mental health might be characterized by a substantial asymmetry, in which some strategies might play a larger role in the etiology, maintenance, and treatment of disorders.

Second, and more importantly, Aldao and Nolen-Hoeksema (2012) examined the relationship between emotion regulation strategies and mental health in a large community sample and found that the habitual use of putatively adaptive strategies (acceptance, positive reframing) interacted with the habitual use of putatively maladaptive strategies (behavioral disengagement, denial) in the prediction of a composite scores of symptoms of anxiety, depression, and alcohol abuse. Specifically, for participants who reported using high levels of putatively maladaptive strategies, the use of putatively adaptive strategies had the expected negative association with the composite score of symptoms. However, for participants who reported using low levels of putatively maladaptive strategies, the association between putatively adaptive strategies and psychopathology was non-significant. These findings lend support to the growing literature on emotion regulation flexibility, as they indicate that putatively adaptive strategies might be most beneficial when people are utilizing a wider range of strategies. More broadly, they suggest that modeling interactions among regulation strategies can be a very important avenue for furthering our understanding of the emotion regulation deficits that characterize mental disorders.

In the present investigation, we adopted a broader approach to the study of the emotion regulation repertoire in order to develop a more in-depth understanding of the patterns of emotion dysregulation in SAD. Participants were part of a randomized control trial of cognitive behavioral therapy for SAD (Hope, Heimberg, & Turk, 2006) and they provided weekly ratings of their use of regulation strategies and their experience of social anxiety symptoms. This afforded us the opportunity to examine the relationships between putatively adaptive/maladaptive strategies and symptoms at the state level, on a weekly basis. This is particularly important because emotions, their regulation, and symptoms of psychopathology fluctuate substantially over time (e.g., Aldao, 2013; Barrett, Gross, Christensen, & Benvenuto, 2001; Bylsma & Rottenberg, 2011; Ebner-Priemer & Trull, 2009; Robinson & Clore, 2002; Srivastava, Tamir, McGonigal, John, & Gross, 2009). In addition, because such assessments were obtained in the context of treatment, they reflected dynamic changes in participants' symptoms and patterns of emotion regulation (e.g., Fentz et al., 2013; Kazdin, 2007)

It is noteworthy that the treatment study consisted of three distinct phases that varied in the extent to which participants were asked to regulate their social anxiety (see Gloster et al., 2013 for a similar approach to CBT for panic disorder). In the first 7 sessions, participants primarily received psychoeducation and learned cognitive restructuring. This constituted the cognitive phase, in which participants began to learn about more effective ways of regulating their emotions by practicing cognitive restructuring skills. In the next 9 sessions, participants continued practicing cognitive restructuring, but did so within the context of structured in-session and out of session behavioral exposures to social anxiety provoking situations (i.e., cognitive + behavioral exposure phase). Here, participants were required to actively confront feared situations and, thus, to frequently practice the new patterns of emotion regulation that they had been learning. After treatment was completed, participants were assessed every three months over the course of a year (i.e., follow-up phase). During this time, they were encouraged to utilize the skills they had acquired over the course of treatment. Given the heterogeneity in emotion regulation demands across the various study phases, we thought it unwise to assume that the associations between weekly emotion regulation and anxiety symptoms would be invariant across study phase. Consequently, we tested whether the associations between strategies and symptoms would be moderated by treatment study phase (e.g., Gloster et al., 2013)

Based on prior meta analytic work (e.g., Aldao et al., 2010), we hypothesized that the negative association between weekly social anxiety symptoms and use of putatively adaptive strategies would be weaker than the positive association between symptoms and putatively maladaptive strategies. In addition, we expected the weekly use of putatively adaptive and maladaptive strategies to interact with each other in the prediction of weekly social anxiety symptoms (e.g., Aldao & Nolen-Hoeksema, 2012). We did not formulate specific predictions regarding the magnitude or the direction of this interaction in each treatment study phase.

2. Method

2.1. Participants

As part of a larger neuroimaging study examining CBT for SAD, participants were recruited through referrals, community flyers,