SAFETY BEHAVIORS IN GENERALIZED ANXIETY DISORDER: EFFECTS ON SYMPTOM SEVERITY AND TREATMENT OUTCOME

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Abstract

Safety behaviors are behaviors performed with the intention of reducing and managing threat. Paradoxically, their use leads to increases in anxiety that maintain symptoms across a variety of anxiety disorders. However, the role of safety behaviors in Generalized Anxiety Disorder (GAD) specifically is not well understood. Preliminary research has shown GAD patients engage more frequently in these behaviors, but it is unclear whether safety behaviors are associated with GAD symptoms above the effects of worry and the extent to which they impact treatment outcomes. The current study examined the role of safety behaviors in GAD; we hypothesized a positive correlation between symptom severity and safety behavior usage above the effects of worry, significantly higher levels of safety behavior usage in GAD patients, and a moderating effect of safety behaviors on treatment outcome, with greater usage leading to poorer treatment outcomes. The study was a secondary analysis of a computerized worry reduction treatment study. Participants completed the Penn State Worry Questionnaire, Worry Behaviors Inventory, and DSM-5 GAD symptom severity measure at baseline and follow-up. Safety behavior usage was positively correlated with GAD symptom severity controlling for worry (r=.335, p=.020), but did not differ in those with and without a GAD diagnosis. Contrary to predictions, heightened safety behaviors at baseline were associated with better treatment outcome. The study lends support to the consideration of behavioral symptoms in GAD. Future studies should further clarify the interaction between cognitive and behavioral avoidant strategies in this condition.

Keywords: safety behaviors, worry, GAD, behavioral avoidance, cognitive avoidance, computerized worry treatment.

SAFETY BEHAVIORS IN GENERALIZED ANXIETY DISORDER

Generalized Anxiety Disorder (GAD) is characterized by excessive worry about various activities and situations, such as health, work, or home life (American Psychiatric Association, 2013). A great deal of research has shown that anxiety disorders such as GAD are maintained by avoidance of anxious situations (Mahoney et al., 2016; McManus et al., 2008; Robichaud, 2013; Wells et al., 2016). A common avoidance strategy exhibited across the anxiety disorders is the use of safety behaviors, which are behaviors performed to minimize or manage threat in an anxiety-provoking situation (Beesdo-Baum, et al., 2012). Examples include excessive reassurance seeking, which is the process by which an individual seeks constant reaffirmation from those around them to reduce their anxiety, and excessive planning for a worst-case scenario (Beesdo□Baum et al., 2012; Gillett & Mazza, 2018).

Safety behaviors are perpetuated through negative reinforcement, as their use results in a reduction in anxiety (Salkovskis, 1991; Salkovskis et al., 1999). For example, if a patient with GAD fears that a loved one will be in a car crash coming home from work, they may excessively ask a friend for reassurance that a crash did not occur. In the short-term, this reassurance-seeking will reduce anxiety. However, in the long-term, these anxiolytic effects reinforce both the perception that a situation is threatening and the use of safety behaviors whenever the situation arises. This is problematic because safety behavior use can also prevent disconfirmation of threat, since individuals attribute positive outcomes to the use of the safety behavior, rather than to the inherent safety of the situation (Salkovskis et al., 1999). The use of safety behaviors thus prevents safety learning regarding the situation itself (Blakey & Abramowitz, 2016).

To date, GAD research has primarily focused on cognitive mechanisms, such as worry, that maintain the disorder by helping an individual manage threat through avoidance (Borkovec, et al., 2004). However, safety behaviors, such as reassurance-seeking and checking, are frequently present in individuals with GAD and are likely to have similar clinical implications to the use of safety behaviors in other anxiety disorders. As a result, Mahoney and colleagues (2016, 2018) developed the Worry Behaviors Inventory (WBI), to assess safety behavior usage in GAD. The WBI includes a range of safety behaviors, such as reassurance seeking, excessive planning, and repeated checking. The measure was shown to be a valid tool in assessing safety behavior usage in GAD, possessing convergent validity with the GAD-7 and Penn State Worry Questionnaire (Mahoney et al., 2016) . Furthermore, the WBI was shown to be elevated in individuals with a GAD diagnosis compared to controls (Mahoney et al., 2016). However, neither this study nor past investigations examined if the associations between safety behaviors and broader GAD symptoms existed independently from worry. As such, it is still unclear whether worry and safety behaviors are

redundant constructs, especially given that both are avoidant means of reducing anxiety (Borkovec et al., 2004). With the growing push for behavioral components to be incorporated in clinical guidelines for assessing GAD (Lebeau et al., 2012), it is important to clarify the relationship between GAD symptoms, safety behaviors, and worry.

Across anxiety disorders, the use of safety behaviors during treatment can worsen treatment outcomes (Beesdo□Baum et al., 2012; Helbig□Lang & Petermann, 2010; Salkovskis, 1991; Salkovskis et al., 1999; Sloan & Telch, 2002), but few studies have examined the impact of safety behaviors on GAD treatment outcome specifically. Effective treatment often requires fear confrontation to promote habituation and provide corrective information for the perceived threat (Foa & Kozak, 1986; Schmidt et al., 2012). As safety behaviors are inherently avoidant, their usage hinders fear confrontation by lowering arousal and preventing threat disconfirmation and habituation (Salkovskis, 1991; Salkovskis et al., 1999; Schmidt et al., 2012; Wells et al., 2016). The coupling of safety behaviors to threat and anxiety can also cause safety behaviors to serve as cues to be anxious (Gangemi et al., 2012). If an individual is unsure of how to respond to a situation and notices they are using their safety behaviors, they may interpret this to mean the situation is something to be anxious about (Van den Hout et al., 2014).

Most research on the impact of safety behaviors on treatment has focused on anxiety disorders other than GAD (Salkovskis et al., 1999; Wells et al., 2016). Beesdo-Baum and colleagues (2012) examined safety behavior usage in the context of GAD treatment, finding that GAD patients exhibited greater safety behavior usage than healthy controls and higher safety behavior usage at post-treatment was associated with higher worry ratings six to twelve months after treatment, accounting for post-treatment worry ratings. However, the study utilized exposure-based and applied relaxation treatments, whereas GAD treatment typically includes an emphasis on cognitive mechanisms (Zinbarg et al., 2006). As such, it will be important to examine whether safety behaviors, not typically targeted in cognitive treatments, impact treatment outcomes.

The current study sought to examine the importance of safety behaviors in the context of a treatment study of individuals with elevated worry, many of whom met criteria for GAD. While past studies have demonstrated a positive association between safety behaviors and GAD symptoms, it is unclear if this effect is redundant with worry. Worry is a cognitively avoidant strategy (Borkovec, et al., 2004), which may differ from the behavioral avoidance exhibited with safety behaviors. The study also analyzed whether usage of safety behaviors impacted treatment outcomes in a novel Worry Disengagement Training (WDT) intervention for pathological worriers. This computerized treatment

involves having individuals alternate between writing about worry and positive non-worry topics to facilitate attentional disengagement from worry (McDermott & Cougle, in press). While safety behavior usage negatively affects treatment outcome in the context of exposure therapy (Beesdo□Baum et al., 2012; Salkovskis et al., 1999; Sloan & Telch, 2002), it is unclear how these behaviors will affect WDT, a more cognitively focused treatment.

To address the first area of concern, the distinction between worry and safety behaviors and their effect on GAD, we hypothesized that safety behavior usage would be positively correlated with GAD symptoms above the effects of worry. We also hypothesized that individuals with GAD would present with higher levels of safety behaviors than worriers without GAD (Mahoney et al., 2016; Mahoney, Hobbs, Newby, et al., 2018). When discussing the effects of safety behaviors on treatment outcome, we hypothesized that greater safety behavior use at baseline would be associated with worse treatment outcome because safety behaviors are likely to keep individuals focused on sources of threat and distract them from considering positive alternatives to worry.

Methods

Participants

The current study made use of existing data collected from an experimental study assessing the potency of computerized treatments for worry (McDermott & Cougle., in press). Fifty participants were recruited (92% female), with an average age of 19.02 (SD=1.62). Participants were recruited via the FSU subject pool. The sample was restricted to those high in worry (PSWQ score above 60), with 66% (*n*=33) meeting criteria for GAD.

Measures

Penn State Worry Questionnaire (PSWQ) (Meyer et al., 1990). This 16-item questionnaire measures an individual's level of worry. Items on this scale included statements such as "I do not tend to worry about things." Participants responded to these items on a scale from 1 ("not at all typical of me") to 5 ("very typical of me"). This measure was used to obtain pre- and post-treatment levels of worry in participants to determine the effects that safety behaviors have on post-treatment reductions in worry. Internal consistency was adequate in the current sample (α=.75).

Worry Behaviors Inventory (WBI) (Mahoney et al., 2016). This 10-item measure assesses the use of common safety behaviors, especially reassurance seeking, individuals who show signs of GAD. The measure asks participants to rate the frequency of which certain statements (i.e. "I seek reassurance from sources of information (e.g. personal records, internet, reviews, books)") apply to them on a scale from 1 ("No, not at all") to 7 ("Very much"). The purpose of this measure is to find the frequency of safety behavior usage to assess the

role safety behaviors have on GAD symptoms and treatment outcomes. This measure displayed good internal consistency (α=.80).

Severity Measure for Generalized Anxiety Disorder–Adult (GAD5) (Lebeau et al., 2012). This 10-item measure examines the severity of GAD symptoms over the past seven days. Participants provide the frequency of their symptoms (i.e. "felt moments of sudden terror, fear or fright.") on a scale from 0 ("Never") to 4 ("All of the time"). This measure allows us to observe symptom severity at baseline and determine if this is associated with safety behavior usage. The measure had less than adequate internal consistency (α=.68) .

Procedures

Participants completed an initial screening at the beginning of the first lab visit in which it was determined whether they met the diagnostic criteria for GAD. After this, the participant filled out a series of baseline questionnaires. Following the completion of these tasks, those in the treatment condition completed a treatment session in the lab, then returned to the lab to complete an additional two treatment sessions over the course of the week. They then completed three additional treatment sessions at home, after which they came back in for a follow-up visit. Those in the waitlist condition returned for the same follow-up assessment.

Treatment

Worry Disengagement Training (WDT) (McDermott & Cougle, in press). Participants engaged in six sessions of treatment, each lasting approximately 30 minutes. Treatment included four writing periods for worry and four writing periods for non-worry alternatives for disengagement; participants alternated between worry writing and non-worry writing for the duration of the session. Worry writing periods asked participants to discuss a current, future-oriented worry, describing their thoughts and fears about the worry topic. After completing a worry period, participants were prompted to disengage and focus on positive alternatives to worry such as meaningful activities, future goals, and helping others. By alternating between worry writing and positive non-worry writing, the treatment intended to increase attentional disengagement abilities that could be applied whenever individuals begin to worry.

Data Analysis Plan

A bivariate correlation was used to examine the association between safety behavior usage and GAD symptom severity. A follow-up partial regression looked at this association while controlling for worry. An independent samples t-test was used to examine if there were differences in mean safety behavior usage based on GAD-status. To determine the interaction between treatment condition and behavior usage in predicting treatment outcome, hierarchical regressions were conducted. Step one included centered condition, centered

WBI, and pre-PSWQ scores. Step two added the interaction term for WBI and condition. For both steps, the outcome variable was post-PSWQ score. Additional regressions looked at the interaction effect when WBI scores were high and low using one standard deviation above and below the mean.

Results

In line with our first hypothesis, bivariate correlations showed that, at baseline, safety behavior usage was positively correlated with GAD symptoms (r=.374, p=.008) but not worry (r=.179, p=.219). The pre-planned partial correlation to examine the association between safety behaviors and GAD symptoms controlling for worry was performed and showed that the association was still significant when controlling for the effects of worry (partial r=.335, p=.020). Our second hypothesis was not supported, as the independent samples t-test showed that there was no difference in safety behavior usage in participants with (M=23.56 , SD=7.13) and without GAD (M=24.76, SD=6.14; t(47)=.589, p=.559). Our third hypothesis was partially confirmed, as safety behavior usage moderated the association between treatment condition and post-treatment PSWQ scores, such that this association was significant only for individuals high in baseline safety behaviors (Table 1). However, contrary to our hypothesis, this association was negative. Post-treatment reductions in worry were present only for those high in baseline safety behavior usage (β=-.640, p<.001), whereas there was no association between condition and outcome for those low in safety behavior usage (β=-.115, p=.479). Individuals with higher baseline safety behaviors experienced greater benefits from treatment and lower safety behavior usage had no effect on treatment outcome.

Discussion

Safety Behaviors and GAD Symptoms

The current study assessed the association between safety behaviors and GAD symptom severity, and the impact of baseline safety behaviors on treatment outcome for pathological worry. We hypothesized that greater safety behavior usage would be correlated with increased GAD symptom severity, controlling for the effects of worry. We found a positive association between safety behaviors and GAD symptoms, consistent with past studies detailing the link between GAD symptoms and safety behavior usage (Beesdo□Baum et al., 2012; Cougle et al., 2012; Mahoney et al., 2016). Further, this relationship remained significant when controlling for worry, indicating that safety behaviors are not redundant with worry in their impact on disorder symptoms. These results emphasize the importance of considering these behaviors in the clinical presentation of those with GAD and point to the need for further examinations of the causal associations between safety behaviors, worry, and broader GAD symptoms. As recent studies have demonstrated bidirectional mediation of cognitive and behavioral

avoidance in predicting symptom severity (Mahoney, Hobbs, Williams, et al., 2018), future research should incorporate the present findings to examine how safety behaviors and worry function independently and in tandem to affect GAD symptoms.

Safety Behavior Usage Differences in GAD

Our second hypothesis predicted that individuals with GAD would exhibit higher safety behavior usage than those without GAD; this hypothesis was not supported. We found no difference in safety behavior usage in those who did or did not meet diagnostic criteria for GAD. It is possible safety behaviors are linked to greater symptom severity but cannot be used to differentiate those with and without GAD. This relationship, however, is not in line with previous findings, which have shown that safety behaviors are more common in GAD patients (Mahoney et al., 2016; Mahoney, Hobbs, Newby, et al., 2018). The nature of our sample should be considered when evaluating this discrepancy; the present study was restricted to high worriers regardless of GAD status. It is possible that current safety behavior measures have less ability to differentiate individuals with and without GAD at higher levels of worry.

Safety Behaviors and Treatment Outcome

Our third hypothesis was that safety behaviors at baseline would worsen treatment outcomes, and this hypothesis was partially supported. While baseline safety behaviors did interact with treatment condition in predicting post-treatment worry ratings, we found that this was only in participants with high safety behavior usage. The treatment was only effective in reducing worry for individuals with heightened baseline safety behaviors. This result was the opposite of what we hypothesized, as we predicted high baseline safety behavior usage would worsen treatment outcomes. While several studies have shown that safety behavior usage can negatively affect treatment outcomes across anxiety disorders, these studies focused on treatment involving worry exposure (Beesdo□Baum et al., 2012; Salkovskis, 1991; Salkovskis et al., 1999; Wells et al., 2016). As the current treatment focused on attentional worry disengagement, safety behaviors may affect treatment via a different mechanism. Anxious individuals who use safety behaviors tend to over or under-engage with their anxiety (Mahoney et al., 2016). Safety behaviors involve either the inability to disengage from worry, for example through checking, planning, or seeking reassurance, or avoidance of engagement with worries, for example through avoiding situations, thoughts, or people that cause worry. As the aim of WDT was to train appropriate levels of engagement with worry, it is possible that participants with heightened safety behavior usage at baseline may have especially benefitted from WDT due to these preexisting deficits in disengagement ability that were directly targeted with this treatment.

Limitations

Several limitations exist that impact the findings of this study. As mentioned previously, the sample was restricted to only those high in worry. In addition, the sample was predominately female undergraduates. Both factors limit the generalizability of this study to the general public and to treatment-seeking populations. Another limitation is the lack of tracking safety behavior usage during treatment. As this was a secondary data analysis, tracking safety behavior usage at each treatment session was not included in the original protocol. Due to this limitation, it remains unclear if changes in safety behavior usage during treatment impacted outcomes, or whether our interaction findings could be attributable solely to baseline differences. Future studies should monitor safety behaviors throughout treatment to determine if safety behaviors employed during treatment impact outcomes. Finally, the current study employed a cross-sectional design, limiting conclusions about the directionality of the relationships we found, particularly that between safety behaviors and symptom severity. Future studies should incorporate a longitudinal design to clarify the relationship between behavioral avoidance and GAD symptoms above the effects of worry. Additionally, such a study could examine temporal effects between safety behaviors and worry.

Conclusion

The current study found safety behaviors were positive associated with GAD symptom severity controlling for the effects of worry. These findings add further support to the inclusion of behavioral symptoms in the clinical evaluation and treatment of GAD. Furthermore, our findings suggest that individuals who frequently use safety behaviors may actually experience greater benefits from treatment targeting disengagement from worry. This supports the notion that safety behaviors should be assessed prior to treatment. Understanding baseline levels of safety behavior usage can aid clinicians in better assessing treatment outcomes.

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