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Focus article

Safety behaviors, experiential avoidance, and anxiety: A path analysis approach

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ABSTRACT

Avoidance has long been viewed as an etiological mechanism of anxiety disorders. Of more recent focus within this literature is the distinction between avoidance that is trait-based (experiential avoidance) versus contextual (safety behaviors). Whereas both experiential avoidance and safety behaviors have been studied within anxiety research, no known studies have evaluated the direct and indirect relationships of these forms of avoidance in predicting critical outcomes, particularly in conjunction with symptom severity. To address this gap, the current study assessed social anxiety and panic symptoms, experiential avoidance, use of preventive and restorative safety behaviors, and quality of life to determine the direct and indirect contributions of trait-based and contextual avoidance in predicting clinically relevant outcomes via path analysis. U.S. adults with elevated social anxiety or panic symptoms ($n = 254$) were recruited online. Results from path analysis showed that, across groups, the relationship between symptoms and quality of life was indirectly accounted for by use of preventive safety behaviors. Further, for participants with panic symptoms (but not for those with social anxiety symptoms), experiential avoidance predicted quality of life even after accounting for use of preventive safety behaviors. The results of this study indicate that trait-based and contextual avoidance contribute significantly to clinically relevant outcomes.

1. Introduction

Anxiety disorders are the most prevalent group of mental disorders, with nearly one third of the United States population meeting diagnostic criteria for an anxiety disorder in their lifetime (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). Significant research has focused on better understanding the mechanisms of anxiety disorders in order to fully delineate both their maintaining factors and targets for treatment. One mechanism of anxiety disorders that has garnered significant attention has been avoidance behavior (Forsyth, Eifert, & Barrios, 2006; Olatunji, Forsyth, & Feldner, 2007), viewed as any attempt to downregulate unpleasant experiences through avoidance, escape, suppression, distraction, or control (Craske et al., 2008). Importantly, avoidance behavior has been understood and measured in two central ways. The first relates to immediate behavior intended to downregulate unpleasant internal experiences that occur within a specific context, known as safety behaviors (Blakey & Abramowitz, 2016). The second relates to a rigid and contextually insensitive trait-like tendency toward avoidance behavior, conceptualized as experiential avoidance (Forsyth et al., 2006; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). One distinction between these two forms of avoidance is that experiential avoidance can function in a more trait-like manner, as a general stance one holds towards unpleasant experiences, whereas safety behaviors operate within specific external and internal contexts. Although significant research has linked both experiential avoidance and safety behaviors to anxiety disorders (Bardeen, Fergus, & Orcutt, 2013; Blakey & Abramowitz, 2016; Helbig-Lang et al., 2014; Kashdan, Barrios, Forsyth, & Steger, 2006, 2014; Okajima, Kanai, Chen, & Sakano, 2009; Wolgast, Lundh, & Viborg, 2013), no known studies have attempted to understand the precise relationship of these two forms of avoidance in predicting critical outcomes such as quality of life, especially in relation to symptom severity. As such, elucidating the relative importance of these distinct forms of avoidance (i.e., experiential avoidance, safety behaviors) in predicting clinically relevant outcomes is vital to better understand the factors that maintain clinical anxiety and to better specify therapeutic targets.

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1.1. Safety behaviors

Safety behaviors in the context of anxiety disorders have long been understood to have deleterious effects on various clinical outcomes (Blakey & Abramowitz, 2016; Forsyth et al., 2006). Safety behaviors are broadly viewed as immediate, contextual actions that aim to prevent, escape, or minimize the feared consequences of anxiety, including the distress associated with anxiety itself (Blakey & Abramowitz, 2016). Examples of safety behaviors include mentally rehearsing before a social situation, reducing physiological arousal through diaphragmatic breathing, or reassurance-seeking behaviors. Regarding their role in the development and maintenance of anxiety disorders, safety behaviors have been proposed as a critical etiological feature of anxiety disorders as they deprive the individual from being exposed to environmental contingencies that would serve to disprove the underlying fear belief (Helbig-Lang et al., 2014). In support of this notion, previous research has suggested that safety behaviors are a necessary feature in the development of anxiety psychopathology, converting what might be considered a normal or expected fear response into something more severe (Olatunji et al., 2007). Indeed, this view of safety behaviors has been further supported in the experimental literature (Deacon & Maack, 2008; Helbig-Lang et al., 2014; Kashdan et al., 2014). However, additional work has indicated that judicious use of safety behaviors may in fact improve treatment outcomes by enhancing acceptability and a sense of control over the fear situation (Levy & Radomsky, 2016; Milosevic & Radomsky, 2012), though outcomes have been mixed (Blakey & Abramowitz, 2016). In light of these discrepant findings, additional work is needed to understand the precise function and types of safety behaviors, and how their utilization predicts clinical improvement versus deterioration.

To better understand the function of safety behaviors, more recent research has distinguished between preventive safety behaviors (PSBs) and restorative safety behaviors (RSBs; Helbig-Lang & Petermann, 2010). PSBs attempt to avoid or prevent the occurrence or exposure to a fear situation (e.g., avoiding social situations), whereas RSBs attempt to restore perceived safety or comfort following the exposure to a fear situation (e.g., diaphragmatic breathing following a panic attack). The key difference between these is that PSBs disallow the individual from making complete contact with a threatening situation whereas RSBs do not (Helbig-Lang & Petermann, 2010). In light of this distinction, a recent review of 35 studies found that RSBs are less likely to interfere with the efficacy of exposure-based behavioral treatments than are PSBs (Goetz, Davine, Siwiec, & Lee, 2016). Specifically, about half of 23 PSB studies showed negative effects associated with use of PSBs, whereas none of the 9 RSB studies found negative effects associated with the use of RSBs. As such, to the extent that individuals are able to confront the feared threat, the efficacy of exposure therapy for anxiety disorders should proceed unimpeded even if RSBs are used afterwards. Conversely, because PSBs can prevent or minimize confrontation with a core threat, they are believed to undermine the efficacy of exposure therapy (Goetz et al., 2016).

1.2. Experiential avoidance

Experiential avoidance is defined as an unwillingness to remain in contact with unpleasant internal experiences (e.g., thoughts, emotions), coupled with attempts to change the form, frequency, or occurrence of those experiences or the situations that elicit them (Hayes et al., 1996). Experiential avoidance reflects a particular orientation towards one's experiences, thus influencing a variety of avoidance strategies within distressing situations, which commonly include behavioral avoidance, distraction, rumination, reappraisal, or suppression (Chambers, Gullone, & Allen, 2009). More broadly, any overt or covert safety behavior that seeks to escape stressful experiences, avoid unpleasant events and related emotional experiences, or inhibit certain affective states in the absence of environmental threat of danger may be, in part, determined by heightened experiential avoidance (Kashdan et al., 2006). Increased experiential avoidance is associated with a host of negative outcomes including reduced quality of life (QoL; Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011; Kashdan, Morina, & Priebe, 2009), increased psychological symptom severity (Gámez et al., 2011; Thompson & Waltz, 2010), and worsened physical health symptoms (Andrew & Dulin, 2007; Berghoff, Tull, DiLillo, Messman-Moore, & Gratz, 2017). Importantly, experiential avoidance itself is viewed as an iatrogenic process specifically when it influences a reliance on avoidance behaviors rigidly across diverse contexts, which may indicate more severe forms of psychopathology (Hayes et al., 1996; Kashdan et al., 2006). That is, high levels of experiential avoidance may result in an overreliance on safety behaviors across a variety of contexts that elicit distress (Karekla & Panayiotou, 2011), which can lead to reduced goal-directed behavior, less resiliency, and fewer opportunities to disconfirm potentially unhelpful cognitive biases (Craske et al., 2008; Forsyth et al., 2006; Kashdan et al., 2006; Olatunji et al., 2007).

Viewed this way, many conceptualizations of experiential avoidance consider it to be trait-like as it may serve to influence avoidant behavior across a variety of specific contexts that elicit psychological distress (Gámez et al., 2011; Kashdan et al., 2006). Consistent with this perspective, validated measures of experiential avoidance assess it as trait-like in its function (Bond et al., 2011; Gámez et al., 2011; Karekla & Panayiotou, 2011). As such, experiential avoidance is often viewed as a latent factor that influences a range of avoidance behaviors within diverse contexts (e.g., avoiding or leaving a distressing situation, distracting oneself during a distressing situation, ruminating about an embarrassing social event), which can include the use of safety behaviors.

1.3. The present study

Despite numerous studies examining the functions of experiential avoidance and safety behaviors, no known studies have investigated the direct and indirect relationships of these constructs in predicting key outcomes, particularly in conjunction with symptom severity. As such, the current study sought to address this vital gap in understanding how different types of avoidance – safety behaviors and experiential avoidance – respectively predict clinical outcomes either directly or indirectly through use of path analysis. To achieve this aim, we measured experiential avoidance, time devoted to safety behavior utilization, social anxiety and panic symptoms, and QoL in an online sample of adults reporting elevated panic or social anxiety symptoms. Within the path analytic model, time devoted to safety behaviors was conceptualized as the mechanism linking both experiential avoidance and anxiety symptoms to QoL. That is, because previous literature has shown a negative correlation between experiential avoidance (Gámez et al., 2011) and anxiety symptoms (Barrera & Norton, 2009) with QoL, we hypothesized that the negative impact of both experiential avoidance and anxiety symptoms on QoL reflected the extent to which each related to safety behavior use. Thus, use of safety behaviors was viewed as occurring in response to existing symptoms and experiential avoidance. We hypothesized that the extent to which trait-level avoidance (i.e., experiential avoidance) or anxiety symptoms predict poorer QoL would depend on their influence on daily, contextual avoidance behavior (i.e., time devoted to safety behavior use). Importantly, time spent on safety behaviors was distinguished by time devoted to *each* PSBs and RSBs. First, based on previous research investigating the respective functions of both PSBs and RSBs (Goetz et al., 2016), we hypothesized that time spent on PSBs would be uniquely associated with QoL whereas time spent on RSBs would not. Second, through use of path analysis, we hypothesized that the relationship between both symptom severity and experiential avoidance with QoL would be indirectly accounted for by use of PSBs.

2. Method

2.1. Participants

All study procedures were approved by the Health & Medical Human Research Ethics Committee at the University of Wollongong in Australia. Inclusion criteria entailed: 1) providing consent; 2) passing three attention checks (Oppenheimer, Meyvis, & Davidenko, 2009); 3) completing all survey items; and 4) receiving a score of ≥12 on the Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) Physical Concerns subscale or a score of ≥27 on the Brief Fear of Negative Evaluation Scale – Straightforward (BFNE-S; Rodebaugh et al., 2004). These eligibility scores were determined based on mean scores of individuals with panic disorder on the ASI-3 (Taylor et al., 2007) and social anxiety disorder on the BFNE-S (Carleton, Collimore, McCabe, & Antony, 2011; Rodebaugh et al., 2004). A sample with clinically elevated symptoms was chosen for the current study to better understand the role of avoidance (i.e., experiential avoidance, safety behaviors) in the context of anxiety symptoms specifically. Individuals reporting elevated social anxiety or panic symptoms were sought as the corresponding disorders are associated with use of numerous safety behaviors in daily life (American Psychiatric Association, 2013). Surveys were administered via the Amazon Mechanical Turk (MTurk) system, an online crowdsourcing market where anonymous individuals complete online tasks for monetary compensation. Previous research has established that MTurk samples are both more diverse and of commensurate reliability when compared to U.S. college samples often used in behavioral research (Buhrmester, Kwang, & Gosling, 2011; Chandler & Shapiro, 2016). Further, the utility of MTurk as applied to clinical mental health samples has been established in previous research (Chandler & Shapiro, 2016; Shapiro, Chandler, & Mueller, 2013).

A total of 960 U.S. adults were recruited to complete an initial survey to screen for both panic and social anxiety symptoms. Of these participants, 706 were excluded due to exhibiting no elevated symptoms of panic or social anxiety (n = 571), failing to pass one or more attention checks (n = 126), unwillingness to complete all required measures (n = 71), incomplete data (n = 6), or not consenting to full study procedures (n = 5), with some participants exhibiting two or more of these exclusion criteria. Participants who exhibited elevated symptoms on both panic and social anxiety measures were randomized to either the panic or social anxiety group using a 2:1 ratio, respectively, to account for group size differences. The final sample (N = 254, M_{age} = 36.7 years, 66.5% female, 79.9% Caucasian) entailed both a group with elevated panic symptoms (n = 109, M_{age} = 36.8, 58.7% female, 79.8% Caucasian) and a group with elevated social anxiety symptoms (n = 145, M_{age} = 36.6, 72.4% female, 80% Caucasian).

2.2. Measures

2.2.1. Anxiety sensitivity Index-3 (ASI-3), physical concerns subscale

The ASI-3 (Taylor et al., 2007) Physical Concerns subscale was administered to all participants to assess fear of anxious physiological arousal. This measure is comprised of 6 items rated on a 5-point Likert-type scale ranging from 0 (*very little*) to 4 (*very much*). The ASI-3 Physical Concerns subscale was used in the present study to screen for individuals who report significant fears of physical arousal, per diagnostic criteria of panic disorder (American Psychiatric Association, 2013). The ASI-3 Physical Concerns subscale has demonstrated strong internal consistency in clinical samples in past research (α = .86; Taylor et al., 2007) and in the present sample (α = .88).

2.2.2. Brief fear of negative evaluation – straightforward (BFNE-S)

The BFNE-S (Rodebaugh et al., 2004) was administered to all participants to assess fear of negative evaluation associated with social contexts. This measure is comprised of 8 items rated on a 5-point Likert-type scale ranging from 1 (*Not at all characteristic of me*) to 5 *(Entirely characteristic of me*). The BFNE-S was used in the present study to screen for individuals who reported significant fears of negative evaluation and as a symptom measure for the social anxiety group, per diagnostic criteria of social anxiety disorder (American Psychiatric Association, 2013). This measure was chosen to represent social anxiety because fear of negative evaluation is a core feature of social anxiety disorder. Previous research has shown strong internal consistency (αs > 0.92) for this measure in both clinical and nonclinical samples (Carleton et al., 2011), with the measure also showing strong internal consistency (α = .94) in the current sample.

2.2.3. Panic disorder severity scale – self report (PDSS)

The PDSS (Houck, Spiegel, Shear, & Rucci, 2002) is a measure that assesses the severity of panic disorder symptoms. This measure is comprised of 7 items which assess various aspects of panic symptoms: panic frequency, distress during panic, panic-related anticipatory anxiety, avoidance of situations, avoidance of physical sensations, impairment in work functioning, and impairment in social functioning. Each of these items are rated on a five-point Likert scale ranging from 0 to 4, with qualitative descriptions ranging from absence of symptoms or impairment to extreme presence of symptoms or impairment. Internal consistency in the current sample was high (α = 0.92). To reduce collinearity and overlap with the measure of safety behavior utilization in the current study, the 4 PDSS items assessing behavioral avoidance were removed from analyses involving the PDSS in order to focus solely on non-overlapping panic symptoms. After removing these items, internal consistency remained high (α = 0.90).

2.2.4. Safety behavior scale (SBS)

The SBS (Meyer et al., 2018) is a recently developed measure designed to assess safety behavior utilization (i.e., forms, daily frequency, time spent per day) in anxiety disorders, along with positive attitudes towards the use and function of safety behaviors. The SBS is administered by having individuals first indicate their most feared outcomes, coupled with a list of safety behaviors (e.g., “Rehearsing or planning what you will say or do,” “Scanning your thoughts, body, or surroundings for danger”), including the option to write one not listed, the individual uses to address those feared outcomes. The SBS is divided into two sections, PSBs and RSBs. For purposes of the current study, only two items, daily time devoted to PSB use and daily time devoted to RSB use, were used across both panic and social anxiety groups. These items were chosen as they reflect time spent engaging in immediate behaviors for the purpose of avoiding or minimizing feared outcomes. Each frequency item assessed the amount of daily time spent engaging in the safety behavior(s) specified by the individual on a scale of 0–4, with anchors corresponding to 0 = *None*, 1 = *Less than* 1 h *each day*, 2 = *Between 1 and* 3 h *each day*, 3 = *Between 3 and* 8 h *each day*, and 4 = *8 or more hours each day*. All participants completed the SBS according to group. As such, participants who were randomized to either the social anxiety or panic group completed the SBS in relation to either social anxiety or panic symptoms only. Based on the current sample, internal consistency for the SBS was excellent (α = .93) in assessing beliefs about safety behaviors, and good (α = .88) in assessing frequency of safety behavior utilization.

2.2.5. Brief experiential avoidance questionnaire (BEAQ)

The BEAQ (Gámez et al., 2014) is a well-validated, multidimensional, transdiagnostic measure of experiential avoidance across 6 dimensions: Behavioral Avoidance, Distress Aversion, Procrastination, Distraction/Suppression, Repression/Denial, and Distress Endurance. Consistent with its development (Gámez et al., 2014), the BEAQ was used as a single sum score, reflecting one’s disposition to utilize avoidance behaviors in distressing situations. The BEAQ contains 15 items rated on a Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), used to measure an individual’s trait-like avoidance tendencies. In the current sample, the measure showed adequate

internal consistency (α = 0.87).

2.2.6. Quality of life enjoyment and satisfaction questionnaire – short form (Q-LES-Q-SF)

The Q-LES-Q-SF (Stevanovic, 2011) was administered to all participants as a measure of QoL in order to assess for satisfaction with physical and mental health, leisure activities, social relationships, family, sexual intimacy, socioeconomic status, and overall well-being. This measure is comprised of 16 items rated on a 5-point scale ranging from 1 (*very poor*) to 5 (*very good*), where higher scores indicate a higher quality of life. In the current sample, the measure showed excellent internal consistency (α = .92).

2.3. Analyses

In R 3.3.0 (R Core Team, 2016), a hierarchical regression model was built within the social anxiety and panic groups to evaluate the relative importance of PSBs versus RSBs in predicting QoL. This was also done to assess whether both PSBs and RSBs should be utilized as predictors for subsequent analyses, or whether only one served as a meaningful predictor.

To examine the second hypothesis, that the relationship between both symptom severity and experiential avoidance with QoL would be accounted for by use of safety behaviors, path analyses were conducted using EQS 6.1 (Bentler, 2005). The path analyses examined the paths from (a) symptom severity and (b) experiential avoidance to safety behaviors, (c) symptom severity and (d) experiential avoidance to QoL, and (e) safety behaviors to QoL (see Fig. 1). This model allowed us to examine the direct paths from symptom severity and experiential avoidance to QoL, as well as the indirect paths from symptom severity and experiential avoidance to QoL through safety behaviors.

3. Results

Means and standard deviations for all measures are shown in Table 1. The average scores obtained in the current study are commensurate to those found for these measures in past research using panic disorder and social anxiety disorder samples (Carleton et al., 2011; Gámez et al., 2014; Stevanovic, 2011; Wyrwich et al., 2009). Although four items assessing avoidance were removed from the PDSS for analyses, the average total PDSS scores using all PDSS items from the current study (M = 7.47, SD = 6.10) were similar to scores from previous research using clinical samples (Houck et al., 2002). A Pearson correlation plot is shown for all measures within both social anxiety and panic groups in Table 2.

3.1. Preventive vs. Restorative safety behaviors

The first set of analyses tested the role of time devoted to RSBs and

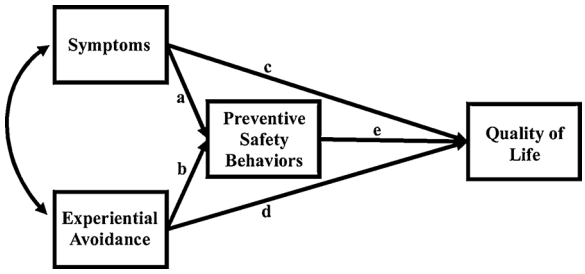

Fig. 1. Path model evaluated in the current study. Single-headed arrows are predictive paths; double-headed arrows are correlated variables. The paths being examined include (a) symptom severity to safety behaviors, (b) experiential avoidance to safety behaviors, (c) symptom severity to quality of life, (d) experiential avoidance to quality of life, and (e) safety behaviors to quality of life.

Table 1
Means and Standard Deviations for All Measures.

Group	Measure	Mean	*SD*
Social Anxiety (n = 145)	RSB	1.07	0.77
	PSB	1.41	0.88
	BEAQ	53.80	11.92
	Q-LES-Q-SF	45.68	10.39
	BFNE-S	33.77	4.30
Panic (n = 109)	RSB	1.27	0.96
	PSB	1.47	0.86
	BEAQ	54.82	12.60
	Q-LES-Q-SF	46.14	10.74
	PDSS	3.41	2.90

Note. Item means reported. BEAQ items on a 6-point Likert-type scale; all other measures on a 5-point Likert-type scale. RSB = restorative safety behaviors measured by Safety Behavior Scale; PSB = preventive safety behaviors measured by Safety Behavior Scale; BEAQ = Brief Experiential Avoidance Questionnaire; Q-LES-Q-SF = Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form; BFNE-S = Brief Fear of Negative Evaluation – Straightforward; PDSS = Panic Disorder Severity Scale – Self Report.

Table 2
Pearson Correlation Coefficients by Group.

Social Anxiety Group Scale	1	2	3	4	5
1. RSB	–				
2. PSB	0.58 **	–			
3. BEAQ	0.17 *	0.20 *	–		
4. Q-LES-Q-SF	−0.30 ***	−0.38 ***	−0.24 **	–	
5. BFNE-S	0.12	0.24 **	0.25 **	−0.23 **	–
Panic Group Scale	1	2	3	4	5
1. RSB	–				
2. PSB	0.66 ***	–			
3. BEAQ	0.22 *	0.29 **	–		
4. Q-LES-Q-SF	−0.32 ***	−0.50 ***	−0.49 ***	–	
5. PDSS	0.47 ***	0.56 ***	0.34 ***	−0.44 ***	–

Note. RSB = restorative safety behaviors measured by Safety Behavior Scale; PSB = preventive safety behaviors measured by Safety Behavior Scale; BEAQ = Brief Experiential Avoidance Questionnaire; Q-LES-Q-SF = Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form; BFNE-S = Brief Fear of Negative Evaluation – Straightforward; PDSS = Panic Disorder Severity Scale – Self Report.
*p < .05; **p < .01; ***p < .001.

PSBs in predicting QoL within the social anxiety and panic groups, respectively. As Table 3 presents, within each group when use of RSBs was the sole predictor, it significantly predicted lower QoL. However, when PSBs were added to the models across groups, RSBs no longer predicted QoL for either group, while PSBs accounted for a significant portion of the variance in QoL outcomes across both the social anxiety and panic groups. Specifically, PSBs accounted for a large amount of variance in QoL within the panic group, while accounting for a small to medium amount of the variance in QoL for the social anxiety group, per Table 3. Based on these results, time devoted to PSBs was shown to uniquely predict lower QoL outcomes relative to time devoted to RSBs. Thus, time spent on PSB utilization was used as the sole safety behavior predictor variable for the path analyses.

3.2. Path analysis: safety behaviors vs. Experiential avoidance and symptom severity

The path analysis model we evaluated is depicted in Fig. 1. Because the model is just identified, we were not able to evaluate overall model fit. Instead, we focused on the statistical significance of the specified paths. Results from these analyses, which were conducted separately for

Table 3
Preventive vs. Restorative Safety Behaviors in Predicting Quality of Life.

Social Anxiety (n = 145)	Q-LES-Q-SF					
Predictor	R^2	F	B	$SE\ B$	β	t
Step 1	.09	14.55***				
RSB			−4.10	1.07	−0.30	−3.81***
Step 2	.16	13.23***				
RSB			−1.63	1.28	−0.12	−1.27
PSB			−3.70	1.21	−0.31	−3.30***
Panic (n = 109)	**Q-LES-Q-SF**					
Predictor	R^2	F	B	$SE\ B$	β	t
Step 1	.10	12.19***				
RSB			−3.60	1.03	−0.32	−3.51***
Step 2	.25	18.03***				
RSB			0.22	1.25	0.02	0.17
PSB			−6.48	1.40	−0.52	−4.63***

Note. RSB = restorative safety behaviors measured by Safety Behavior Scale; PSB = preventive safety behaviors measured by Safety Behavior Scale; Q-LES-Q-SF = Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 4
Standardized Path Coefficients from SEM Analyses Predicting Quality of Life.

Path	Social Anxiety	Panic
a. Symptoms → Safety Behaviors	0.20	0.52*
b. Experiential Avoidance → Safety Behaviors	0.15	0.12
c. Symptoms → Quality of Life	−0.12	−0.14
d. Experiential Avoidance → Quality of Life	−0.15	−0.35*
e. Safety Behaviors → Quality of Life	−0.33*	−0.32*

Note: The safety behavior variable represents use of preventive safety behaviors. *$p < 0.05$.

the social anxiety and panic samples, are presented in Table 4. Looking first at the results for social anxiety, results indicate that there was a statistically significant path from symptom severity to use of PSBs, but not from experiential avoidance to use of PSBs. These results show that social anxiety symptom severity, but not experiential avoidance, was directly and positively associated with time devoted to PSBs. Second, the path from time devoted to PSBs to QoL was statistically significant. Finally, the paths from symptom severity to QoL and from experiential avoidance to QoL were not statistically significant. Taken together, these results suggest that social anxiety symptom severity was indirectly associated with lower QoL through the path of PSB utilization, whereas experiential avoidance was not directly or indirectly associated with QoL. The model accounted for 7.8% of the variance in time devoted to PSBs and 18.8% of the variance in QoL.

Turning next to the results for panic (Table 4), results indicate that there was a statistically significant path from symptom severity to use of PSBs, but not from experiential avoidance to use of PSBs. These results indicate that panic symptom severity, but not experiential avoidance, was directly and positively associated with time devoted to PSBs. Second, the path from time devoted to PSBs to QoL was significant such that use of PSBs were directly and negatively associated with QoL. Finally, there was a statistically significant path from experiential avoidance to QoL, whereas the path from panic symptom severity to QoL was not statistically significant. Taken together, and similar to the results from the social anxiety group, these results suggest that panic symptom severity was indirectly associated with lower QoL through the path of PSB utilization. In contrast to the model for social anxiety, however, the model for panic further suggests that experiential avoidance was directly and negatively associated with QoL. The model accounted for 32.6% of the variance in time devoted to PSBs and 39.5% of the variance in QoL.

In light of the differences found between social and panic groups with respect to the direct association between experiential avoidance and QoL, a two-tailed Fisher's Z-test was conducted to compare the correlation coefficients between groups. Results indicated a statistically significant difference between social anxiety and panic groups in their correlations between experiential avoidance and QoL, $z = 2.27$, $p < .05$. Thus, the relationship between experiential avoidance and QoL was stronger within the panic group than the social anxiety group.

4. Discussion

Although researchers have investigated the separate roles of experiential avoidance and safety behaviors in predicting anxiety outcomes, this is the first known study to implement a path analysis approach to better understand the associations among these avoidance constructs, particularly in conjunction with symptom severity. In addressing this gap, the current study first evaluated the respective roles of daily time devoted to preventive (PSBs) and restorative (RSBs) safety behaviors in predicting clinically relevant outcomes. After accounting for use of preventive safety behaviors, restorative safety behaviors did not significantly predict quality of life. This finding supports the first hypothesis predicting that time devoted to preventive safety behaviors would uniquely predict quality of life across both groups whereas time devoted to restorative safety behaviors would not. This finding is commensurate with previous work (Goetz et al., 2016), and consistent with the notion that preventive safety behaviors are problematic as they disallow individuals from fully confronting fear stimuli/situations, whereas restorative safety behaviors may not be problematic as they do not disallow this confrontation. Importantly, previous work has tended to focus exclusively on symptom-based outcomes (see Goetz et al., 2016). As such, an important finding from the current study is the extension of this previous literature to quality of life, such that preventive safety behaviors uniquely predicted lower quality of life whereas restorative safety behaviors did not. As such, the deleterious effects of preventive safety behaviors are not confined solely to symptomatic outcomes, but affect overall quality of life as well.

The second hypothesis predicted that use of preventive safety behaviors would indirectly account for the relationship between symptom severity and experiential avoidance on the one hand, and quality of life on the other hand. Overall, this hypothesis was partially met. For the social anxiety group, the results showed that social anxiety symptom severity was indirectly associated with poorer quality of life through the path of preventive safety behaviors. In contrast, there was no evidence that experiential avoidance was directly or indirectly associated with quality of life. This pattern of results suggests that, in the context of social anxiety, experiential avoidance was not a meaningful predictor of quality of life within the current path analytic model. However, symptom severity was a meaningful predictor of lower quality of life, but only indirectly as this relationship was assumed by the use of preventive safety behaviors. For the panic group, results indicated a similar pattern where panic symptom severity was indirectly associated with lower quality of life through the path of preventive safety behaviors. In contrast to the social anxiety group, however, for the panic group, experiential avoidance was directly associated with lower quality of life independent of preventive safety behavior use. As such, these results for the panic group suggest that experiential avoidance is a meaningful and direct predictor of lower quality of life, and that this relationship is not assumed by use of preventive safety behaviors.

The finding that use of preventive safety behaviors accounts or partially accounts for symptom severity in predicting lower quality of life is consistent with previous experimental research in social anxiety disorder illustrating the importance of contextual avoidance processes (Kashdan et al., 2014). Further, the general finding that preventive safety behaviors are strong predictors of clinically relevant outcomes beyond self-reported symptoms is consistent with emotion regulation research on the central role of behavioral avoidance in anxiety and fear-

related psychopathology (Forsyth et al., 2006; Kashdan et al., 2006). This previous work suggests that avoidance potentiates fear events, leading to the development or exacerbation of an anxiety disorder, and thus further avoidance via negative reinforcement (Olatunji et al., 2007). To speculate on the findings from the current study, it may be the case that use of preventive safety behaviors potentiates symptom severity in creating worse quality of life – future studies could evaluate this possibility longitudinally.

To our knowledge, this is the first known study to explore the connection between both trait-like avoidance (i.e., experiential avoidance) and contextual avoidance (i.e., safety behaviors) in relation to symptom severity in predicting quality of life. A critical finding from the current study is that symptom severity across both social anxiety and panic groups was not a significant predictor of quality of life when accounting for time spent on preventive safety behaviors. In light of this finding, this is the first study to show that the use of preventive safety behaviors accounts for variance in quality of life to the extent that symptom severity no longer predicts quality of life. The results across both panic and social anxiety groups yield a shared conclusion that time devoted to preventive safety behaviors is critically important in understanding the quality of life impacts of anxiety disorders. Thus, these results are consistent with the view that preventive safety behaviors are problematic from a quality of life perspective, and thus warrant targeting in behavioral treatments.

However, a distinction between panic and social anxiety groups was the relative importance of preventive safety behaviors. Specifically, use of preventive safety behaviors indirectly accounted for the relationship between symptom severity and quality of life in the social anxiety group, whereas experiential avoidance did not directly or indirectly predict quality of life in this group. In contrast, although use of preventive safety behaviors did similarly and indirectly account for the relationship between symptom severity and lower quality of life in the panic group, trait-like experiential avoidance also directly predicted lower quality of life. This finding shows that for the panic group, both contextual avoidance and trait-level experiential avoidance were important in predicting quality of life, but for the social anxiety group, only contextual avoidance remained important.

An interesting finding from the current study was that, within the path analysis model, experiential avoidance did not significantly predict the time spent on preventive safety behaviors although they did significantly correlate with one another, albeit fairly weakly. Given the reliance on avoidance strategies to alter the form, frequency, or contexts of distressing events, it would make sense that the deleterious effects of experiential avoidance operates through the use of safety behaviors. That is, as one becomes more unwilling to experience certain unpleasant experiences, it would be expected that they also become more reliant on behaviors that seek to remove or downregulate those experiences. However, the current study did not find such a relationship between experiential avoidance and use of preventive safety behaviors when predicting quality of life (in the path analysis, accounting for symptom levels). A possible explanation for this may involve the way in which preventive safety behavior utilization was currently measured, focusing only on the time spent engaging in preventive safety behaviors. Specifically, it may be the case that experiential avoidance relates to different dimensions of safety behavior utilization beyond time spent engaging in them, such as the frequency or the form of the safety behaviors themselves – a possibility that future studies could more thoroughly investigate.

The current study had several notable strengths. First, whereas the majority of the literature has relied on a measure of experiential avoidance (i.e., Acceptance and Action Questionnaire; Bond et al., 2011) that has been criticized for loading primarily onto factors associated with neuroticism and distress rather than experiential avoidance per se (Rochefort, Baldwin, & Chmielewski, 2017; Wolgast, 2014), the current study used a measure of experiential avoidance that has held up to similar close psychometric scrutiny (see Rochefort et al., 2017). Second, the current study utilized a large sample consisting of adults reporting clinically significant anxiety disorder symptoms rather than a general sample, more closely approximating clinically relevant (i.e., anxiety pathology) populations. Third, we measured time spent on both preventive safety behaviors and restorative safety behaviors, allowing for a more nuanced understanding of how specific types of safety behavior use might predict clinically relevant outcomes. Finally, the current study relied on path analysis in constructing a model capable of examining the direct and indirect influences of symptom severity and experiential avoidance in predicting quality of life through preventive safety behavior use.

The current study also had several limitations. First, given the use of a MTurk sample, the clinical status of the participants could not be definitively confirmed. Further, previous research has shown that MTurk samples may report higher distress compared to face-to-face research (Arch & Carr, 2017; Arditte, Cek, Shaw, & Timpano, 2016). This limitation could be overcome in the future by conducting similar in-person research with elevated anxiety samples. Second, the findings of this study stem from cross-sectional data, prohibiting claims of causality. Finally, the preventive safety behaviors variable stemmed from a single item assessing average time spent engaging in preventive safety behaviors. Worth noting, this single item captures both active (e.g., time spent engaging in checking behavior) and passive (e.g., avoiding a social situation due to fear of interacting with strangers) safety behaviors, the latter of which may be more difficult for participants to estimate. Future research should determine whether additional aspects are relevant in outcomes spanning symptom severity and quality of life. At the same time, the fact that this variable accounted for numerous indirect effects of symptom severity on quality of life suggests that time devoted to preventive safety behaviors as measured in the current study is a robust predictor of quality of life outcomes.

5. Conclusions

To our knowledge, the current study represents the first to investigate the direct and indirect paths of trait-like and contextual avoidance in predicting clinically relevant outcomes among adults with elevated symptoms of social anxiety or panic. The novel findings indicate that, across social anxiety and panic groups, time devoted to preventive safety behaviors accounted for the relationship between symptom severity and lower quality of life. Further, within the panic group only, trait-like experiential avoidance directly predicted lower quality of life as well. Further, and of particular theoretical and clinical importance, the presence of anxiety symptoms was not significantly predictive of quality of life after accounting for time spent on preventive safety behaviors. These findings suggest that the behavioral response to feeling anxious plays a critical role in anxiety disorders, and may be more relevant in determining functional outcomes than the presence of anxiety by itself.

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