The Moderating Role of Experiential Avoidance in the Prospective Relationship Between Anxiety Sensitivity and Anxiety

Joseph R. Bardeen, Thomas A. Fergus & Holly K. Orcutt

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BRIEF REPORT

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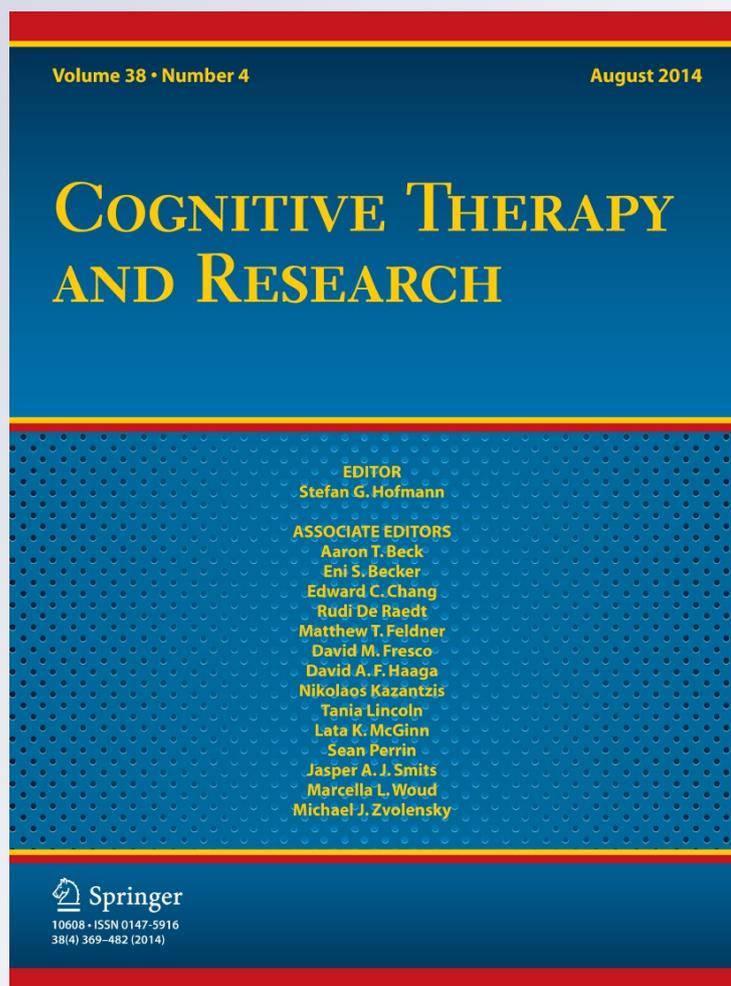Joseph R. Bardeen · Thomas A. Fergus ·
Holly K. Orcutt

Abstract Cross-sectional research has shown that the association between anxiety sensitivity (i.e., a trait-like fear of anxiety-related bodily sensations due to beliefs that these sensations engender negative outcomes) and anxiety becomes stronger as experiential avoidance (i.e., an unwillingness to stay in contact with unwanted inner experiences) increases. The present study sought to extend cross-sectional research by examining whether the moderating impact of experiential avoidance would be observed when examining anxiety sensitivity as a prospective predictor of anxiety over the course of two assessment sessions (T1 and T2). Participants ($N = 135$) were non-treatment seeking undergraduate students. As predicted, T1 experiential avoidance moderated the relationship between T1 anxiety sensitivity and T2 anxiety, even after accounting for T1 anxiety. The interaction was tested with simple slopes analysis and results suggest that anxiety sensitivity may only be a vulnerability factor for the development of anxiety among those who are prone to higher levels of experiential avoidance. Thus, experiential avoidance may be a particularly important treatment target among individuals with high anxiety sensitivity.

J. R. Bardeen (✉)
Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216, USA
e-mail: jbardeen@niu.edu; jbardeen@umc.edu

T. A. Fergus
Department of Psychology and Neuroscience, Baylor University, Waco, TX, USA

H. K. Orcutt
Department of Psychology, Northern Illinois University, DeKalb, IL, USA

Introduction

Anxiety disorders are the most commonly occurring mental health disorder in the United States, affecting approximately 18 % of Americans in a given year (Kessler et al. 2005). Psychological distress is not the only negative consequence of anxiety disorders. The human burden associated with anxiety disorders includes impairments in occupational, social, and family functioning, as well as overall impairment in quality of life and poorer physical health (Hoffman et al. 2008). Moreover, it is estimated that the economic burden of anxiety disorders (e.g., work performance losses, treatment costs) adds up to over 42 billion dollars per year (Kessler and Greenberg 2002). Thus, given the staggering costs of anxiety disorders—both human suffering and economic burden—the importance of identifying vulnerability and protective factors for anxiety cannot be overstated.

Anxiety sensitivity has received a great deal of attention in the extant literature for its role in the development and maintenance of anxiety (for a review see Naragon-Gainey 2010). Anxiety sensitivity is conceptualized as a trait-like fear of anxiety-related bodily sensations due to beliefs that these sensations will have adverse social, psychological, and physical outcomes (Reiss and McNally 1985). Anxiety sensitivity is distinguishable from trait anxiety in that trait anxiety indicates a tendency to respond with fear to stressors more generally, whereas anxiety sensitivity indicates a tendency to respond with fear to anxiety more specifically (McNally 2002). Additionally, differentiation between anxiety sensitivity and anxiety has been suggested

by findings from longitudinal studies. For example, anxiety sensitivity, but not trait anxiety, has been shown to prospectively predict the emergence of panic attacks at a one year follow-up assessment among patients with simple phobia and nonclinical controls (Ehlers 1995). Moreover, anxiety sensitivity has been shown to predict the emergence of panic over a five week period of prolonged stress (i.e., US Air force basic training), even after controlling for baseline trait anxiety (Schmidt et al. 1997).

Although evidence from a number of prospective studies has suggested anxiety sensitivity as a vulnerability factor in the pathogenesis of anxiety (e.g., Ginsburg and Drake 2002; Hayward et al. 2000; Schmidt et al. 1999, 2006), some evidence suggests that the impact of anxiety sensitivity on anxiety may depend on the degree to which one is willing to stay in contact with unwanted internal experiences. For example, in a community sample of young adults ($N = 248$), Kashdan et al. (2008) found that, among participants with higher anxiety sensitivity, the relationship between anxiety sensitivity and anxiety became stronger as unwillingness to accept negative emotions increased. A similar cross-sectional moderation effect was observed by Bardeen et al. (2013) in a large general population sample of adults ($N = 838$). Specifically, Bardeen et al. (2013) found that the relationship between anxiety sensitivity and anxiety became stronger as experiential avoidance increased. Together, these findings suggest that it may be particularly important to account for one's willingness to stay in contact with uncomfortable internal experiences when examining the role of anxiety sensitivity in the development of anxiety.

Experiential avoidance represents an unwillingness to stay in contact with unwanted inner experiences (i.e., emotions, thoughts, bodily sensations, memories) and is believed to increase the likelihood that one will employ avoidant coping strategies (Hayes et al. 1996). The avoidance of unwanted inner experiences often alleviates distress in the short-term, but paradoxically exacerbates distress over the long-term (e.g., Abramowitz and Moore 2007; Hodgson and Rachman 1972). As such, experiential avoidance has been suggested as a core vulnerability factor for emotional distress. Consistent with this proposition, a plethora of laboratory and correlational studies have shown a positive association between experiential avoidance and a host of constructs marked by emotional distress, including anxiety (Chawla and Ostafin 2007; Hayes et al. 2004). It should be noted that avoidance, in-and-of-itself, does not appear to be maladaptive. Instead, the chronic and rigid use of avoidance to alleviate distress across contexts, as is often seen in those with relatively higher levels of experiential avoidance, appears to lead to maladaptive outcomes (Bonanno and Burton 2013).

Given that experiential avoidance is described as an unwillingness to stay in contact with unwanted inner experiences, including bodily sensations, and an aversion to anxiety-related bodily sensations is emphasized in anxiety sensitivity, one might surmise that there is significant overlap in these two constructs. Indeed, empirical research has shown that measures of these two constructs share between 9 and 18 % of variance (Bardeen et al. 2013; Forsyth et al. 2003). Additionally, Zvolensky and Forsyth (2002) found that body vigilance, the degree to which one attends bodily sensations, shared 22 % of variance with anxiety sensitivity-related physiological concerns and only 3 % of variance with anxiety sensitivity. It therefore appears that anxiety sensitivity and experiential avoidance are distinct, but related constructs, and body vigilance may be more pertinent to anxiety sensitivity.

As noted, cross-sectional research has provided evidence that anxiety sensitivity and experiential avoidance interact to predict anxiety, such that the association between anxiety sensitivity and anxiety becomes stronger as experiential avoidance increases (Bardeen et al. 2013; Kashdan et al. 2008). Thus, individuals with higher levels of anxiety sensitivity and a tendency to use maladaptive avoidance to cope with internal distress may be significantly more likely to experience anxiety, whereas higher levels of anxiety sensitivity may be less likely to lead to anxiety among individuals who are more accepting of, or willing to stay in contact with, uncomfortable internal experiences. As described by Kashdan et al. (2008), "whether or not anxiety sensitivity ultimately 'leads' to anxiety psychopathology may depend, at least in part, on how people monitor and manage the physical, cognitive, and behavioral manifestations of anxiety and the situations that elicit such states" (p. 430). The studies noted above (Bardeen et al. 2013; Kashdan et al. 2008) provided an important first step in furthering our understanding of associations among anxiety sensitivity, experiential avoidance, and anxiety; however, their cross-sectional design limits inferences that can be drawn regarding causality. We sought to address this limitation in the present study by examining whether the moderating impact of experiential avoidance would be observed when targeting prospective associations between anxiety sensitivity and anxiety. Consistent with the above rationale, we predicted that experiential avoidance, measured at the first assessment session (T1), would moderate the relationship between anxiety sensitivity at T1 and anxiety at the second assessment session (T2), even after accounting for T1 anxiety. Specifically, we hypothesized that the positive relationship between anxiety sensitivity at T1 and anxiety at T2 would be significantly stronger among those with relatively higher levels of experiential avoidance at T1. Evidence of the hypothesized effect would suggest that

anxiety sensitivity may only be a vulnerability factor for the development of anxiety among those who are prone to higher levels of experiential avoidance. The present study was designed so that participants could complete both assessment sessions within the course of an academic semester. Longitudinal follow-ups of similar length have been used with undergraduate samples and with the assessment of anxiety over time (e.g., Hankin et al. 2004; Kassel et al. 2006; Schmidt et al. 1997; Towbes and Cohen 1996). Because of the number of developmental tasks which confront adolescent undergraduates (e.g., choosing a career path, achieving independence from family, preparing for relationship commitment, developing new friendship circles), adolescent undergraduates are especially vulnerable, and prone, to experiencing stressful circumstances (Towbes and Cohen 1996), and thus, could be a particularly relevant population for examining anxiety using a relatively short longitudinal study design.

Methods

Participants and Procedure

The sample consisted of 135 (84 women; 51 men) undergraduate students recruited from a mass testing pool at a Midwestern U.S. University. Participants were not recruited based on levels of anxiety, anxiety sensitivity, or experiential avoidance; all students from the mass-testing pool, who were over the age of 18, were eligible to participate in the present study. The sample had an average age of 21.9 years ($SD = 2.2$) and 65 % self-identified as White, 15 % as Black, 7 % as Asian, 1 % as American Indian or Alaska Native, 11 % endorsed "other", while 1 % preferred not to respond. Additionally, 9 % of participants reported being of Hispanic/Latino ethnicity.

For this institutional review board approved study, participants completed two assessment sessions over the course of an academic semester. Participants were able to complete T1 from the beginning of the semester to within 30 days of the end of the semester. Participants were invited to complete T2 25 days after T1 and this option remained open until the end of the semester. At each assessment session, participants completed a battery of random-ordered questionnaires. A secure online survey program was used to administer informed consent and study measures. Both study sessions could be completed from any computer with internet access. Participants were given credit for their introductory psychology course following study completion. The interval between T1 and T2 varied ($M = 36.8$ days; $SD = 10.6$; range 26–84 days); over 90 % of the sample completed T2 within 26-50 days of T1.

Measures

Anxiety Sensitivity was assessed via the Anxiety Sensitivity Index–3 (ASI-3; Taylor et al. 2007). The ASI-3 is an 18-item self-report measure that assesses the fear of arousal-related sensations due to physical, cognitive, and social concerns. ASI-3 items were developed based on the 16-item, unidimensional, Anxiety Sensitivity Index (Peterson and Reiss 1992) For the ASI-3, respondents rate each item on a 5-point scale ($0 = Very\ little$ to $4 = Very\ much$) based on the degree to which they agree with each statement (e.g., "It is important for me not to appear nervous"). Higher scores on the ASI-3 are indicative of higher levels of anxiety sensitivity. The ASI-3 has demonstrated adequate psychometric properties, including internal consistency, and discriminant, convergent, and criterion-related validity (Taylor et al. 2007). The ASI-3 ($M = 14.81$, $SD = 13.68$, $range = 0$–54) demonstrated adequate internal consistency in the present study (T1: $\alpha = .94$).

Experiential avoidance was assessed via the Acceptance and Action Questionnaire–II (AAQ-II; Bond et al. 2011). The AAQ-II is a 7-item self-report measure that assesses one's ability to remain in contact with painful internal events (e.g., "My painful memories prevent me from having a fulfilling life"). Of relevance to the present study, none of the AAQ-II items explicitly refer to bodily sensations, instead focusing primarily on thoughts, feelings, and memories. Respondents rate each item on a 7-point scale ($1 = never\ true$ to $7 = always\ true$). Higher scores on the AAQ-II are indicative of higher levels of experiential avoidance. The AAQ-II has demonstrated adequate psychometric properties, including internal consistency, discriminant and convergent validity, and predictive validity over a one year time period (Bond et al. 2011). The AAQ-II ($M = 17.98$, $SD = 9.36$, $range = 7$–44) demonstrated adequate internal consistency in the present study (T1: $\alpha = .93$).

Anxiety was assessed at both time points via the Anxiety Scale of the Depression Anxiety Stress Scales (DASS-21 Anxiety; Lovibond and Lovibond 1995a). The DASS-21 Anxiety Scale is comprised of 7 self-report items (e.g., "I felt I was close to panic") which are rated on a 4-point scale ($0 = Did\ not\ apply\ to\ me\ at\ all$ to $3 = Applied\ to\ me\ very\ much,\ or\ most\ of\ the\ time$). Participants were instructed to indicate the degree to which each statement applied to them over the past week. Individuals diagnosed with an anxiety disorder, as per DSM-IV-TR criteria (American Psychiatric Association 2000), score significantly higher on the DASS-21 Anxiety Scale in comparison to nonclinical volunteers (Antony et al. 1998). Additionally, DASS-21 Anxiety Scale scores discriminate between mood and anxiety disorders (Brown et al. 1997). In addition, the DASS-21 Anxiety Scale has demonstrated

convergent validity with other anxiety measures (e.g., Beck Anxiety Inventory: Beck and Steer 1990; Lovibond and Lovibond 1995b). The DASS-21 Anxiety Scale (T1: $M = 3.47$, $SD = 4.20$, $range = 0–21$; T2: $M = 2.71$, $SD = 3.28$, $range = 0–17$) demonstrated adequate internal consistency at both time points (T1: $\alpha = .89$; T2: $\alpha = .81$). Despite utilization of a sample consisting of undergraduate students, considerable variability in DASS-21 Anxiety Scale scores was observed, with approximately 35 % of the sample reporting anxiety at T1 that was not in the "normal" range (i.e., 9 % in the "mild" range, 13 % in the "moderate" range, 4.5 % in the "severe" range, and 8.8 % in the "extremely severe" range). Similar variability was observed at T2, with approximately 35 % of the sample reporting anxiety at T1 that was not in the "normal" range (i.e., 9 % in the "mild" range, 16.3 % in the "moderate" range, 5.2 % in the "severe" range, and 4.4 % in the "extremely severe" range; Lovibond and Lovibond 1995a). Further, approximately 77 % of the sample reported a change in DASS-21 Anxiety from T1 to T2, with 32.6 % reporting an increase and 44.4 % reporting a decrease in anxiety over time.

Data Analytic Strategy

Hierarchical regression was used to test the hypothesis that T1 experiential avoidance would moderate the relationship between T1 anxiety sensitivity and T2 anxiety. The interval between time points was included as a covariate in the model to account for duration effects. Additionally, to account for baseline variation in anxiety, T1 anxiety served as a covariate in the model. Following Aiken and West's (1991) recommendations for testing interaction effects, predictor variables were mean centered and an interaction term was calculated as the product of the two predictor variables of interest (i.e., T1 experiential avoidance and T1 anxiety sensitivity). Covariates (i.e., session interval, T1 anxiety) and T1 experiential avoidance and T1 anxiety sensitivity were entered as predictor variables in the first step of the model. The interaction term was entered as a predictor variable in the second step of the model. T2 anxiety served as the outcome variable. Simple slopes analysis was conducted to further investigate the significant interaction effect; the relationship between the predictor (T1 anxiety sensitivity) and outcome variable (T2 anxiety) was tested at both high and low levels ($+1$ and -1 SD) of the moderating variable (T1 experiential avoidance).

Results

As expected, regression analysis showed that all T1 predictor variables (except for session interval) predicted T2

anxiety (Table 1). In the second step of the model, the interaction term significantly predicted T2 anxiety. As predicted, simple slopes analysis revealed a significant positive association between T1 anxiety sensitivity and T2 anxiety for participants with relatively higher T1 experiential avoidance (B $= .08$, $\beta = .33$, $p < .001$). No association was observed between T1 anxiety sensitivity and T2 anxiety for participants with relatively lower T1 experiential avoidance (B $= .01$, $\beta = .02$, $p = .88$; see Fig. 1).

Discussion

Empirical evidence suggests that anxiety sensitivity may be particularly important in predicting anxiety among those who use maladaptive avoidance to cope with arousal-related bodily sensations to which they are averse (Bardeen et al. 2013; Kashdan et al. 2008). However, given the cross-sectional nature of these previous studies, it was unclear whether the combination of high anxiety sensitivity and high experiential avoidance is a vulnerability factor for the later development of anxiety. To our knowledge, the present study is the first to address these temporal relations. As predicted, experiential avoidance was a significant moderator of the prospective relation between T1 anxiety sensitivity and T2 anxiety. Specifically, higher T1 anxiety sensitivity was only predictive of higher anxiety at T2 for those who had reported relatively higher levels of T1 experiential avoidance.

Results are consistent with the proposal that heightened anxiety sensitivity, in and of itself, may not lead to the development of anxiety. That is, although a main effect of anxiety sensitivity on anxiety was observed in regression analysis, this effect was qualified by a significant interaction with experiential avoidance. Thus, it appears that accounting for one's willingness to stay in contact with uncomfortable internal experiences is particularly important in understanding the likelihood that heightened anxiety sensitivity will lead to anxiety. As noted by Kashdan et al. (2008), "prolonged, inflexible non-acceptance of emotional responses can consume attention, vitality and other resources, leaving fewer resources to cope and thrive in everyday life" (p. 437). In contrast, individuals who find arousal-related bodily sensations particularly aversive, but who are willing to experience them, may be left with enough cognitive resources to flexibly adapt to the daily demands of anxiety inducing situations. As a result, these individuals may not be any more likely to experience anxiety than those with relatively lower levels of anxiety sensitivity.

Study results also highlight the importance of moving beyond correlational and main effects analyses when examining vulnerability and protective factors for

Table 1 Hierarchical multiple regression analysis predicting T2 anxiety symptoms

Predictor	Step 1				Step 2					
	B	β	sr^2	p	B	β	sr^2	ΔF	ΔR^2	p
Step 1								26.89	.46	.000
T1 anxiety	.33	.40	.084	.000	.27	.35	.050			.001
Session interval	.02	.07	.004	.342	.02	.08	.006			.236
T1 EA	.07	.21	.024	.018	.08	.22	.029			.009
T1 AS	.04	.17	.018	.041	.04	.16	.017			.042
Step 3								4.62	.02	.034
Interaction					.01	.15	.019			.034

$N = 135$. *EA* experiential avoidance, *AS* anxiety sensitivity. Interaction = T1 experiential avoidance × T1 anxiety sensitivity
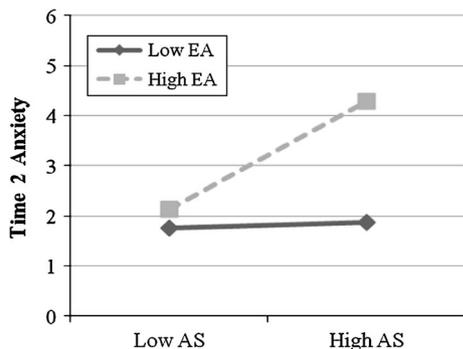

Fig. 1 The interaction effect [experiential avoidance (EA) by anxiety sensitivity (AS)] was a significant predictor of Time 2 anxiety, $\beta = .15$, $p < .05$. Simple slopes analysis revealed a significant positive association between Time 1 anxiety sensitivity and Time 2 anxiety among participants with relatively higher Time 1 experiential avoidance. There was not a significant association between Time 1 anxiety sensitivity and Time 2 anxiety for those with relatively lower Time 1 experiential avoidance

psychopathology. Once basic associations have been sufficiently established, failure to move beyond these main effect models may lead to misinterpretations of vulnerability and protective factors. Thus, examining interactive effects of vulnerability and protective factors may greatly advance our understanding of the complexity of psychopathology, provide more accurate predictions of vulnerability for experiencing maladaptive outcomes, and have important treatment implications. For example, results from the present study suggest that, because anxiety sensitivity only relates to higher anxiety among individuals with higher experiential avoidance, experiential avoidance may be a particularly important treatment target among individuals with high anxiety sensitivity.

Although the present study advances our understanding of temporal relations between anxiety sensitivity, experiential avoidance, and anxiety, limitations must be acknowledged. Relations among study variables may have been inflated due to our monomethod assessment technique. In addition, the interactive effect explained only a modest amount of variance in T2 anxiety. However, this modest significant effect should be considered in light of the fact that we accounted for T1 anxiety in the model. That is, given the large autoregressive effects that can be expected when measuring anxiety over time, especially over a relatively short period of time, it is impressive that the interactive effect accounted for significant variance in T2 anxiety when accounting for T1 anxiety. In addition, the magnitude of the interactive effect observed in the present study is consistent with that which has been observed in the cross-sectional examinations described above (Bardeen et al. 2013; Kashdan et al. 2008). Further, given our reliance on a sample consisting solely of undergraduate students, it will be important to replicate these findings in clinical samples in future research. Moreover, because the DASS-21 Anxiety Scale score is a quantitative measure consistent with a dimensional model of anxiety (Crawford et al. 2001), it may be beneficial to assess for anxiety disorders, as per the DSM-V (American Psychiatric Association 2013), in this area of research in the future. Of note, a multidimensional measure of experiential avoidance was recently developed (Gamez et al. 2011). It may be beneficial to use the noted measure in future research to examine the degree to which specific facets of experiential avoidance account for the moderation effect observed in the present study.

Despite these limitations, the present study contributes to our understanding of the conditions under which anxiety sensitivity leads to anxiety. To our knowledge, the present study is the first to provide temporal evidence that anxiety sensitivity may only be a vulnerability factor for the development of anxiety among those who are prone to higher levels of experiential avoidance. As such, individuals with this combination of vulnerability factors (high levels of both anxiety sensitivity and experiential avoidance) may benefit from preemptive efforts to reduce experiential avoidance. More specifically, vulnerable individuals may be easily identified through the use of self-report measures during primary care visits or through institution level (e.g., workplace, academic) mass testing

and be offered interventions which focus on increasing experiential willingness and decreasing experiential avoidance (e.g., Acceptance and Commitment Therapy: Hayes et al. 2006; Mindfulness-Based Stress Reduction: Kabat-Zinn 1990).

References

Abramowitz, J. S., & Moore, E. L. (2007). An experimental analysis of hypochondriasis. *Behaviour Research and Therapy, 45*, 413–424.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: American Psychiatric Association.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10*, 176.

Bardeen, J. R., Fergus, T. A., & Orcutt, H. K. (2013). Experiential avoidance as a moderator of the relationship between anxiety sensitivity and perceived stress. *Behavior Therapy, 44*, 459–469.

Beck, A. T., & Steer, R. A. (1990). *Manual for the Beck Anxiety Inventory*. San Antonio, Tex: The Psychological Corporation.

Bonanno, G. A., & Burton, C. L. (2013). Regulatory flexibility: An individual differences perspective on coping and emotion regulation. *Perspectives on Psychological Science, 8*, 591–612.

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., et al. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*, 676–688.

Brown, T. A., Chorpita, B. F., Korotitsch, W., & Barlow, D. H. (1997). Psychometric properties of the Depression Anxiety Stress Scales (DASS) in clinical samples. *Behaviour Research and Therapy, 35*, 79–89.

Chawla, N., & Ostafin, B. (2007). Experiential avoidance as a functional dimensional approach to psychopathology: An empirical review. *Journal of Clinical Psychology, 63*, 871–890.

Crawford, J. R., Henry, J. D., Crombie, C., & Taylor, E. P. (2001). Normative data for the HADS from a large non-clinical sample. *British Journal of Clinical Psychology, 40*, 429–434.

Ehlers, A. (1995). A 1-year prospective study of panic attacks: Clinical course and factors associated with maintenance. *Journal of Abnormal Psychology, 104*, 164–172.

Forsyth, J. P., Parker, J. D., & Finlay, C. G. (2003). Anxiety sensitivity, controllability, and experiential avoidance and their relation to drug of choice and addiction severity in a residential sample of substance-abusing veterans. *Addictive Behaviors, 28*, 851–870.

Gamez, W., Chmielewski, M., Kotov, R., Ruggero, C., & Watson, D. (2011). Development of a measurement of experiential avoidance: The multidimensional experiential avoidance questionnaire. *Psychological Assessment, 23*, 692–713.

Ginsburg, G. S., & Drake, K. (2002). Anxiety sensitivity and panic attack symptomatology among African American adolescents. *Journal of Anxiety Disorders, 16*, 83–96.

Hankin, B. L., Abramson, L. Y., Miller, N., & Haeffel, G. J. (2004). Cognitive vulnerability-stress theories of depression: Examining affective specificity in the prediction of depression versus anxiety in three prospective studies. *Cognitive Therapy and Research, 28*, 309–345.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*, 1–25.

Hayes, S. C., Strosahl, K., Wilson, K. G., Bissett, R. T., Pistorello, J., & McCurry, S. M. (2004). Measuring experiential avoidance: A preliminary test of a working model. *The Psychological Record, 54*, 553–578.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*, 1152–1168.

Hayward, C., Killen, J. D., Kraemer, H. C., & Taylor, C. B. (2000). Predictors of panic attacks in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*, 207–214.

Hodgson, R. J., & Rachman, S. (1972). The effects of contamination and washing in obsessional patients. *Behaviour Research and Therapy, 10*, 111–118.

Hoffman, D. L., Dukes, E. M., & Wittchen, H. U. (2008). Human and economic burden of generalized anxiety disorder. *Depression and Anxiety, 25*, 72–90.

Kabat-Zinn, J. (1990). *Full catastrophe living: using the wisdom of your body and mind to face stress, pain, and illness*. New York: Delacourt.

Kashdan, T. B., Zvolensky, M. J., & McLeish, A. C. (2008). Anxiety sensitivity and affect regulatory strategies: Individual and interactive risk factors for anxiety-related symptoms. *Journal of Anxiety Disorders, 22*, 429–440.

Kassel, J. D., Bornovalova, M., & Mehta, N. (2006). Generalized expectancies for negative mood regulation predict change in anxiety and depression among college students. *Behaviour Research and Therapy, 45*, 939–950.

Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry, 62*, 617–627.

Kessler, R. C., & Greenberg, P. E. (2002). The economic burden of anxiety and stress disorders. In K. Davis (Ed.), *Neuropsychopharmacology: The fifth generation of progress*. Baltimore, MD: American College of Neuropsychopharmacology and Lippincott Williams & Son.

Lovibond, S. H., & Lovibond, P. F. (1995a). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation.

Lovibond, P. F., & Lovibond, S. H. (1995b). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*, 335–343.

McNally, R. J. (2002). Anxiety sensitivity and panic disorder. *Society of Biological Psychiatry, 52*, 938–946.

Naragon-Gainey, K. (2010). Meta-analysis of the relations of anxiety sensitivity to the depressive and anxiety disorders. *Psychological Bulletin, 136*, 128–150.

Peterson, R. A., & Reiss, S. (1992). *Anxiety Sensitivity Index revised manual*. Worthington, OH: IDS Publishing.

Reiss, S., & McNally, R. J. (1985). Expectancy model of fear. In S. Reiss & R. R. Bootzin (Eds.), *Theoretical issues in behavior therapy* (pp. 107–121). San Diego, CA: Academic Press.

Schmidt, N. B., Lerew, D. R., & Jackson, R. J. (1997). The role of anxiety sensitivity in the pathogenesis of panic: Prospective evaluation of spontaneous panic attacks during acute stress. *Journal of Abnormal Psychology, 106*, 355–364.

Schmidt, N. B., Lerew, D. R., & Jackson, R. J. (1999). Prospective evaluation of anxiety sensitivity in the pathogenesis of panic: Replication and extension. *Journal of Abnormal Psychology, 108*, 532–537.

Schmidt, N. B., Zvolensky, M. J., & Maner, J. K. (2006). Anxiety sensitivity: Prospective prediction of panic attacks and Axis I pathology. *Journal of Psychiatric Research, 40*, 691–699.

Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., et al. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the Anxiety Sensitivity Index-3. *Psychological Assessment, 19*, 176–188.

Towbes, L. C., & Cohen, L. C. (1996). Chronic stress in the lives of college students: Scale development and prospective prediction of distress. *Journal of Youth and Adolescence, 25*, 199–217.

Zvolensky, M. J., & Forsyth, J. P. (2002). Anxiety sensitivity dimensions in the prediction of body vigilance and emotional avoidance. *Cognitive Therapy and Research, 26*, 449–460.