Personality and experiential avoidance: A model of anxiety sensitivity

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ABSTRACT

Recent evidence suggests that an interaction of personality dimensions and self-regulatory mechanisms partially explains the development of anxiety-related psychopathology. We examined the associations between behavioral inhibition system (BIS) sensitivity, negative emotionality (NE), anxiety sensitivity (AS), and experiential avoidance (EA) to understand the role of personality dimensions and self-regulatory mechanisms in relation to anxiety disorder risk. In a sample of 675 undergraduates, we used path analysis models to examine the associations between the study variables. The results suggest a positive relationship between BIS sensitivity and EA, and between EA and AS. Therefore, there is an indirect path between BIS sensitivity and AS through EA. Further, the relationship between EA and AS was stronger for men than for women. The examination of an alternative model indicated poor fit and provides evidence for a model of AS that includes personality dimensions and EA.

1. Introduction

Recently, the importance of understanding the intervening mechanisms between personality dimensions and psychopathology has been highlighted (Bijttebier, Beck, Claes, & Vandereycken, 2009; Tull, Gratz, Latzman, Kimbrel, & Lejuez, 2010). Only a small portion of the variance in mental health diagnoses can be accounted for by personality dimensions (Johnson, Turner, & Iwata, 2009). Self-regulatory mechanisms, such as emotion regulation difficulties, have been proposed as an intervening mechanism to explain the relationship between personality dimensions and psychopathology (Bijttebier et al., 2009). In the current study, we investigated the relationships between personality dimensions, experiential avoidance (EA) and anxiety sensitivity (AS). Specifically, we aimed to understand how personality and emotion regulation contribute to anxiety disorder risk.

1.1. Personality dimensions

1.1.1. Reinforcement sensitivity theory

The current conceptualization of reinforcement sensitivity theory (RST; Corr, 2004; Corr & McNaughton, 2008) posits that three neurobiological subsystems (i.e., behavioral approach system [BAS], behavioral inhibition system [BIS], and fight-flight-freeze system [FFFS]) are associated with variations in personality as a function of motivational influences. Individual differences in the sensitivity of the subsystems relate to variations in emotional reactivity and psychopathology. The BAS is activated in response to reward and negative reinforcement, resulting in approach behavior and positive emotional experiences. The FFFS is a defensive-avoidance system activated in response to aversive stimuli, promoting escape, avoidance, or confrontational behaviors associated with fear and panic. In response to conditioned punishment or the termination of reward, the BIS inhibits behavior and diverts resources to manage conflict between the reward and punishment systems (e.g., between the BAS and FFFS). The activation of the BIS and resolution of conflicts may result in anxiety reactions depending on the nature or strength of the conflict and the degree of sensitivity to the conflict between the BAS and FFFS.

In the current study, we used the original BIS/BAS scales (Carver & White, 1994) which, according to the revised RST (rRST; Corr, 2004), assess a combination of BIS and FFFS sensitivity. Previous research supports the use of the BIS scale as a combined measure of BIS and FFFS sensitivity (Smillie, Pickering, & Jackson, 2006). The term “BIS sensitivity” will be used in reference to the combined measurement of BIS and FFFS sensitivity.

1.1.2. Negative emotionality (NE)

The conceptualization of RST includes both state and trait descriptions of emotion and behavior (Corr & McNaughton, 2008). Activation of the BAS and AS results in negative and...
positive affect, respectively. These assumptions have been empirically supported using measures of affect (Campbell-Sills, Liverant, & Brown, 2004). Further, BIS and BAS sensitivity are associated with other personality dimensions linked with affect, such as NE and positive emotionality (PE; Carver & White, 1994). Typically, BIS and BAS are conceptualized as higher-order personality dimensions on which NE and PE comprise lower-order dimensions; however, emotional outcomes are central to both (Watson, Gamez, & Simms, 2005). For the current study, BIS sensitivity and NE are conceptualized as having equal contributions in the models to identify specific associations to EA and AS.

1.1.3. Personality dimensions and anxiety

BIS and BAS sensitivity have been associated with psychopathology; however, BIS sensitivity is typically linked with an increased risk for anxiety psychopathology (Bijttebier et al., 2009). Additionally, BAS sensitivity is linked with various subtypes of social anxiety disorder (e.g., Kashdan, 2002). The relation between NE and PE and anxiety disorders reveal analogous patterns to the BIS/BAS findings. NE has been associated with symptoms and diagnoses of generalized anxiety, panic, posttraumatic stress, and social anxiety (Kotov, Watson, Robles, & Schmidt, 2007; Watson & Naragon-Gainey, 2010). There have been less robust findings between PE and anxiety (i.e., social anxiety; Kotov, Gamez, Schmidt, & Watson, 2010).

Considering that many personality dimensions are associated with emotional reactivity, recent conceptualizations of the relation to psychopathology have identified self-regulatory mechanisms as an explanatory mechanism. Specifically these were proposed in relation to anxiety development to explain how individuals react to and manage the emotional reactivity associated with personality dimensions (Bijttebier et al., 2009). Particularly, two self-regulatory variables predictive of anxiety psychopathology are AS and EA.

1.2. Possible intervening variables

Anxiety sensitivity, defined as the tendency to appraise anxiety-related symptoms as harmful or dangerous (Taylor et al., 2007), is associated with anxiety psychopathology (e.g., Schmidt, Lerew, & Jackson, 1999; Taylor, Koch, & McNally, 1999). There has also been support for associations between AS and personality dimensions, such as neuroticism and NE (Gamez, Watson, & Doebbeling, 2007). Kotov et al. (2007) found that NE was positively associated with panic symptoms, worry, obsessive-compulsive symptoms, and social anxiety symptoms. AS added unique predictive variance for panic and worry in these models (Kotov et al., 2007). There is no research examining BIS and BAS sensitivity with AS. EA is conceptualized as a functional class of maladaptive strategies aimed at reducing the occurrence of unwanted private events (i.e., thoughts, emotions, physiological reactivity; Hayes, Wilson, Gilford, Follette, & Strosahl, 1996) and is implicated in the development and maintenance of anxiety-related psychopathology (e.g., Orsillo & Roemer, 2005). Recent research has found that greater BIS sensitivity and EA are associated with greater posttraumatic stress symptoms among female college students (Pickett, Bardeen, & Orcutt, 2011).

Research has suggested that AS and EA are related (Zvolensky & Forsyth, 2002); however, researchers have attempted to disentangle the connections between AS and EA. In a clinical sample, both AS and EA predicted anxiety symptoms; however, the physical dimension of AS (i.e., perceived dangerousness of physical symptoms) predicted anxiety symptoms beyond EA (Berman, Wheaton, McGrath, & Abramowitz, 2010). Similarly, in an undergraduate sample, the physical dimension predicted health anxiety symptoms beyond EA (Wheaton, Berman, & Abramowitz, 2010). The results suggest that the association between anxiety and experiential avoidance may be a result of the variance shared with anxiety sensitivity (Berman et al., 2010; Wheaton et al., 2010). Although there are limitations for true mediational interpretation, these preliminary data suggest that experiential avoidance is a broad psychological process in which anxiety sensitivity may exist; which may support theory regarding explanatory mechanisms for the development of the anxiety-disorder risk.

1.3. Overview and hypotheses

We aimed to understand the relationships between NE, BIS sensitivity, EA, and AS. We expected to find positive relationships between the personality dimensions (i.e., BIS sensitivity and NE) and EA, given previous research (Pickett et al., 2011). Further, we expected both personality dimensions to be related to AS through a positive relationship with EA. The higher-order model (i.e., EA preceding AS) was chosen because of evidence suggesting AS mediates EA and anxiety symptoms (Berman et al., 2010; Wheaton et al., 2010) and theory to suggest that rigidly adhering to EA processes (i.e., controlling, avoiding, escaping) may serve to exacerbate/strengthen fear-related cognitions (Forsyth, Eifert, & Barrios, 2006). Therefore, we expected EA to be an intervening variable between the personality dimensions and AS. Two models were compared across groups to identify differences in the patterns of data due to differences between men and women in reports of EA (e.g., Karelka & Panayiotou, 2011).

2. Method

2.1. Participants

Participants were 674 college students (384: 57% female) who received course credit in a psychology course at a large Midwestern university. Requirements for participation were that participants be over the age of 18 years and fluent in English. Average age of our sample was 18.9 (SD = 1.9). The majority of participants were freshman (78.5%), and 74.8% identified as White, 9.9% as Black, 6.2% as Asian, and 0.6% as Native Hawaiian or other Pacific Islander, 6.1% endorsed “other,” while 2.4% preferred not to respond.

2.2. Procedure

Participants were recruited as part of a screening protocol for a larger study on emotion regulation and emotional reactivity. Once participants were enrolled, a secure link to an online survey was e-mailed to participants. The informed consent described the purpose of the questionnaires (i.e., to assess emotion regulation and reactivity) and the possibility of being contacted for a future study. Participants indicated consent and then were directed to the online survey. The survey did not include any filler questionnaires. After completing the online survey, participants were given debriefing information and received credit for their introductory psychology class.

2.3. Measures

2.3.1. Multidimensional Personality Questionnaire—brief form (MPQ-BF)

The MPQ-BF (Patrick, Curtin, & Tellegen, 2002) was used as a measure of NE. The MPQ-BF is a 155-item tool to assess various substrates of personality. The questionnaire is structured in a true/false format and is scored by summing the responses for each scale and plotting a T-score value based upon the normative sample of the measure. The MPQ-BF scoring program provided by the authors was used for the current study. The scoring program.
produced T-scores for all dimensions. The T-value for the NE scale was used (Mwomen = 28.85, SDwomen = 28.45; Mmen = 32.88, SDmen = 29.22). The internal consistency for the primary trait scales ranged from α = .75 to α = .84.

2.3.2. BIS/BAS scale

The BIS/BAS scale (Carver & White, 1994) was used to assess BIS sensitivity. The scale is a 20-item self-report measure on which participants rate each item on a 4-point Likert scale (1 = very true for me, 4 = very false for me). A total score representing BIS sensitivity was calculated by summing 7 items (e.g., “I worry about making mistakes”; Carver & White, 1994; Mwomen = 3.04, SDwomen = 0.48; Mmen = 2.74, SDmen = 0.52). Internal consistency for the BIS subscales for the current study was adequate, α = .73.

2.3.3. Anxiety Sensitivity Index-3 (ASI-3)

The ASI-3 (Taylor et al., 2007) was used to measure participants’ fear of arousal-related sensations. The questionnaire asks participants to rate the level of agreement with statements about anxiety-related experiences (i.e., “It is important for me not to appear nervous”). Each item is rated on a 5-point Likert-type scale (0 = Very Little, 4 = Very Much). A higher score demonstrates a higher rating of AS. Although three dimensions of AS are assessed (i.e., physical, cognitive, and social), recent research suggests that the physical and cognitive dimensions are the best representation of the construct (Bernstein et al., 2010). Therefore, a scale comprised of these two dimensions was used in the current study (Mwomen = 5.74, SDwomen = 7.29; Mmen = 6.82, SDmen = 8.01). The internal consistency of this subscale was good, α = .87.

2.3.4. Acceptance and Action Questionnaire-II (AAQ-II)

The AAQ-II (Bond et al., 2011) is a self-report measure of psychological flexibility. The items assess willingness to remain in contact with unwanted/negative private events (e.g., “I’m afraid of my feelings, My painful memories prevent me from having a fulfilling life”). In the current study, the AAQ-II was scored so that high scores were indicative of EA (i.e., the opposite of psychological flexibility: Mwomen = 17.99, SDwomen = 6.98; Mmen = 19.13, SDmen = 8.35). Internal consistency within this sample was good, α = .88.

3. Results

To test the hypothesized model presented in Fig. 1, we employed a multi-group modeling approach to test similarities in factor structure across models (Rigdon, Schumacker, & Wothke, 1998). Mplus (Muthen & Muthen, 2004) was used to determine combined model fit and to test two sub-models simultaneously: one for women and one for men. Maximum likelihood estimation was selected because it is robust to violations of normality (Chou & Bentler, 1995). Model fit was assessed with several absolute fit indices and incremental fit indices, including chi-square, root mean square error of approximation (RMSEA), and comparative fit index (CFI; Bentler, 1990; Browne & Cudeck, 1993). Although a nonsignificant χ² demonstrates that the model fits well, it is dependent on sample size and significant values are often accepted if other indicators of fit are good. RMSEA values less than .08 and CFI values over .90 indicate good fit (Browne & Cudeck, 1993).

For both women and men, AS was positively related to BIS sensitivity and EA. Additionally, BIS sensitivity and EA were positively related. Finally, among women, NE and AS were positively related. Although the hypothesized model fit well, χ²(4, 674) = 6.56, p = ns; RMSEA = .044; CFI = .99, the fit statistics suggested a pathway from NE to AS should be included. The final model, taking this pathway into account, fit well, χ²(2, 674) = 0.60, p = ns; RMSEA = .000; CFI = 1.00 (see Fig. 1). For both men and women, BIS sensitivity was positively related to EA which was positively related to AS. For women, NE was positively related to an increase in EA and AS; however, these pathways were not significant in men.

To determine if the paths estimated across genders were invariant, each path was successively held invariant and compared to the model fit of the comparison model presented above (i.e., the final model). Every path was found to be invariant across gender except one that was found to be marginally non-invariant: the path from EA to AS, χ²(1, 674) = 3.47, p = .062. Given that the chi-square difference test should not be used alone to determine invariance (Anderson & Gerbing, 1988) and there are no standards to judge other changes in fit indices for invariance testing, the change of the RMSEA provides additional support for the importance of the marginal non-variance observed in the analysis. Because the path loading from EA to AS is larger for men than women, this suggests that EA plays more of a role in AS for men than it does for women.
To ensure that the ordering of the constructs was correct (i.e., EA preceded AS as opposed to the opposite), an alternative model was tested hypothesizing that AS preceded EA (see Fig. 2). The model fit poorly, \( \chi^2 (4, 674) = 139.37, p < .001; \) RMSEA = .317; CFI = .59. Therefore, the data suggest that the effects of NE and BIS sensitivity on AS are seen through their effects on EA.

4. Discussion

We examined the relationships between personality (i.e., BIS sensitivity and NE) and anxiety-related risk factors (i.e., EA and AS) in a large college student population. It was hypothesized that both BIS sensitivity and NE would be positively related to EA. Our prediction was partially supported in the final model. Specifically, BIS sensitivity was related to EA for both men and women. However, NE was positively related to both EA and AS for women only. The paths were invariant across gender, rendering an interpretation about the differences of the paths irrelevant. The paths were similar for men and women making it difficult to determine the nature of the relationship between NE and EA, especially in terms of gender differences. This is the first attempt to draw connections between NE and EA; however, the findings are in line with research of gender differences. This is the first attempt to draw connections linking BIS sensitivity to EA.

The positive relationship between BIS sensitivity and EA for both groups supports previous literature suggesting a relationship between BIS sensitivity and maladaptive self-regulatory strategies (Pickett et al., 2011; Tull et al., 2010). The findings suggest that individuals who report heightened BIS sensitivity are also more likely to report an unwillingness to experience private events (i.e., EA). Theoretically, BIS sensitivity may result in anxiety reactions or negative emotional reactivity (Corr, 2004; Corr & McNaughton, 2008). If heightened emotional reactivity (i.e., anxiety) is experienced as overly negative and an individual engages in EA strategies to reduce this experience, the paradoxical increase in anxiety may contribute to anxiety and distress (Wenzlaff & Wegner, 2000). Additionally, heightened BIS sensitivity may provide increased opportunity for engaging in EA strategies. Although heightened emotional reactivity itself may not be problematic, in conjunction with poor emotion regulation strategies, the increased and prolonged negative affect may contribute to negative emotional outcomes (Beck & Clark, 1997).

Lastly, we observed a positive relationship between EA and AS. Invariance testing revealed that the relationship between EA and AS was marginally stronger for men than it was for women. Further, within the context of the final model, the results indicate that men who experience heightened emotional reactivity (i.e., anxiety) and engage in EA strategies are more likely to report AS. These findings may provide some insight into differences in risk for anxiety between men and women. AS is conceptualized as a cognitive vulnerability related to the negative interpretation of physical sensations associated with anxiety (Taylor et al., 1992). Therefore, gender may play a role in the development of problematic interpretations of physical sensations. Future research is needed to determine how gender may influence the development of a cognitive vulnerability in relation to anxiety symptoms.

The relationship between EA and AS in the final model has particular significance when compared to the findings of the alternative model, which examined the ordering of the variables to clarify the relationship between EA and AS. The final model, compared to the alternative model, suggests that EA is an intervening variable in the relationship between personality dimensions and AS; there is an indirect relationship between BIS sensitivity and AS through EA. The current pattern of data supports research suggesting AS is a mediator of EA and anxiety-related psychopathology (Berman et al., 2010; Wheaton et al., 2010). However, some studies suggest that EA is a mediating variable between AS and psychopathology (see e.g., Gratz, Tull, & Gunderson, 2008; Tull & Gratz, 2008). The current study suggests that the variance accounted for by EA in previous studies may not be indicative of mediation, but instead may be accounting for the broad psychological process of EA, which also encompasses or results in AS.

There has been debate about the value that conceptualizations of EA add to the cognitive behavioral framework (Hofmann & Asmundson, 2008). Whereas traditional cognitive behavioral theory posits that anxiety results from dysfunctional thoughts (i.e., interpretations; Taylor et al., 1992) and maladaptive behaviors, EA was developed out of the Acceptance and Commitment Therapy (ACT) framework and focuses on willingness to experience unwanted/negative experiences (i.e., tolerance; Hayes et al., 1996). EA has been conceptualized as a psychological process contributing to a variety of psychopathologies and AS conceptualized as a trait or set of dysfunctional beliefs specific to anxiety psychopathology. The rigid application of EA processes in relation to emotional reactivity may provide a context of fear-conditioning that serves to create negative associations between physiological/emotional reactivity and consequences of this reactivity (Forsyth et al., 2006). Specifically, it is not necessarily the fear-conditioning that leads to problematic outcomes, but the attempts to regulate the outcomes of such fear-conditioning that may lead to the pathological fear, distress, or anxiety associated with these outcomes. From this perspective, it would seem feasible to assume that within the context of heightened emotional reactivity and problematic emotion regulation processes, emotional vulnerabilities, such as AS may develop. With regard to anxiety-related psychopathology, research on ACT suggests that as patients develop greater psychological flexibility (i.e., the theoretical opposite of EA and an aim of ACT) they increase their willingness to experience anxiety-related sensations (Eifert & Forsyth, 2005). Although future research would have to determine if the ACT process directly impacts AS, it seems feasible to assume that as one becomes more psychologically flexible and willing to experience unpleasant physical sensations, one’s interpretations of those sensations may change (i.e., decrease in fear). Although it is impossible to determine developmental trajectories from the data, the current study suggests a pattern of data in which EA precedes AS. Additional research is needed to examine these assumptions further.

4.1. Limitations and conclusions

The cross-sectional design impacts our ability to understand the developmental trajectory of the study variables. The causal relationships of the variables cannot be determined and should be interpreted with the understanding that these variables may be directly influencing one another cross-sectionally. The college student sample may limit the generalizability of the findings to additional populations. There may be concern for generalizability related to age and possibly level of functioning. Extending the current findings to other samples would assume a specific characteristic of a younger age and higher level of functioning, which may not be represented by a community or clinical sample. Further, given that symptoms of anxiety-related psychopathology were not assessed in the current sample, we are assuming that the population represents an asymptomatic group. Although we are discussing a possible model of AS, it cannot be assumed that the sample includes only those without symptoms of anxiety. The sample is likely heterogenous in terms of anxiety symptoms and these characteristics may impact the relationship of the variables. Specifically, anxiety disorders in which there is heightened focus on physiological reactivity (i.e., health anxiety, panic or posttraumatic stress disorders) may strengthen the model relationships. Lastly, the combined measurement of the BIS and FFFS may limit our understanding of the unique contribution of these systems.
The current study provides a preliminary model for anxiety risk that integrates personality and self-regulatory mechanisms. A key contribution of the current study is clarification regarding the relationship of EA to AS, especially in the context of heightened emotional reactivity. Future studies should examine these models longitudinally within community samples reporting anxiety-related symptoms or clinical samples with anxiety diagnoses. These investigations may allow for further understanding of the risk for specific psychopathology. Additionally, continuing to examine self-regulatory and intervening mechanisms in the relationship between personality dimensions and psychopathology may provide important information for clinical practice. Understanding the mechanisms within a neurobiological context that render individuals vulnerable to psychopathology may provide fruitful targets for psychotherapeutic interventions (i.e., increasing psychological flexibility toward natural experiences).

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