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Test of the depression distress amplification model in young adults with elevated risk of current suicidality

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ABSTRACT

Suicide is a leading cause of death among young adults and the rate of suicide has been increasing for decades. A depression distress amplification model posits that young adults with comorbid depression and anxiety have elevated suicide rates due to the intensification of their depressive symptoms by anxiety sensitivity cognitive concerns. The current study tested the effects of anxiety sensitivity subfactors as well as the depression distress amplification model in a very large sample of college students with elevated suicide risk. Participants were 721 college students who were at elevated risk of suicidality (scored > 0 on the Beck Scale for Suicide Ideation). Consistent with prior work, anxiety sensitivity cognitive concerns, but not physical or social concerns, were associated with suicidal ideation. Consistent with the depression distress amplification model, in individuals high in depression, anxiety sensitivity cognitive concerns predicted elevated suicidal ideation but not among those with low depression. The results of this study corroborate the role of anxiety sensitivity cognitive concerns and the depression distress amplification model in suicidal ideation among a large potentially high-risk group of college students. The depression distress amplification model suggests a specific mechanism, anxiety sensitivity cognitive concerns, that may be responsible for increased suicide rates among those with comorbid anxiety and depression.

1. Introduction

Among young adults in the United States, suicide is the second leading cause of death (American College Health Association, 2007). This public health threat appears to be escalating as the suicide rate among young adults has tripled since 1950's (American College Health Association, 2007). Despite these alarming statistics, the vast majority (over 90%) of individuals who die by suicide suffer from mental health disorders and treatment of these disorders can lead to reductions in deaths by suicide (Cavanagh et al., 2003). Therefore, identification of malleable risk factors related to suicide is a key research priority.

An emerging body of empirical work suggests that anxiety sensitivity is significantly associated with suicide related outcomes (Capron et al., 2012c). Anxiety sensitivity is a trait-like cognitive vulnerability that refers to a fear of anxiety related sensations and is made up of physical concerns, cognitive concerns, and social concerns subfactors (Reiss et al., 1986; Zinbarg et al., 1997). Most research on anxiety sensitivity has focused on the relations between anxiety sensitivity and panic attacks and panic disorder (Schmidt et al., 1997; Schmidt et al., 2006). However, other work has shown an association between anxiety sensitivity and non-anxiety conditions such as depression (Taylor et al., 1996) and substance use disorders (Lejuez et al., 2006; Zvolensky et al., 2006; Schmidt et al., 2007a).

The relation between anxiety sensitivity and suicidality appears to be driven by the cognitive concerns facet. Anxiety sensitivity cognitive concerns refer to a fear of losing control of mental processes. Extant work has shown that anxiety sensitivity cognitive concerns are associated with increased levels of suicidal ideation in a number of populations with elevated suicide rates including outpatients with posttraumatic stress disorder (PTSD) symptomatology, individuals with HIV, college students and cigarette smokers (Capron et al., 2012a; Capron et al., 2012b; Capron et al., 2012d; Lamis and Jahn, 2012; Capron et al., 2013a). In addition, a recent study found that an anxiety sensitivity enhanced smoking cessation treatment resulted in lower suicidality among cigarette smokers at post-treatment compared to a control group that received only a general CBT smoking cessation treatment (Capron et al., 2013c).

Recently, the depression distress amplification model was posited to explain the role of anxiety sensitivity cognitive concerns in the development of suicidal ideation (Capron et al., 2013b). Global anxiety sensitivity amplifies distress responses in the

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context of general stress and anxiety symptoms. However, anxiety sensitivity cognitive concerns appear to predispose individuals to show increased distress in the context of aversive physical and psychological *mood* symptoms. In the depression-distress amplification model, suicidal ideation is considered a symptom of depression corresponding to the severity of depression. Just as anxiety sensitivity increases distress responses in the context of uncomfortable physical sensations (Schmidt et al., 2007c), the depression-distress amplification model posits that anxiety sensitivity cognitive concerns amplify distress brought by uncomfortable sensations experienced in the context of emerging or existing dysphoria (e.g. lack of concentration, insomnia, anhedonia). Suicidal ideation emerges when the distress caused by the amplified depression reaches severe levels. This model has been evaluated in an adult clinical sample and been found to predict suicidal ideation above and beyond distress tolerance (Capron et al., 2013b). Further, distress amplification appears to be specific to anxiety sensitivity cognitive concerns, as an interaction between distress tolerance and depressive symptoms was not significantly associated with suicidal ideation (Capron et al., 2013b).

A prominent limitation in the anxiety sensitivity cognitive concerns and suicide literature is that a majority of participants in prior samples have not evidenced any suicidality (Capron et al., 2012c; Capron et al., 2012d). An examination of anxiety sensitivity cognitive concerns and suicidality on a sample where 100% of participants evidence elevated risk of current suicidality is needed to ensure the reliability of these findings. Another issue in the anxiety sensitivity and suicide literature is the relationship of the other anxiety sensitivity subfactors to suicidal ideation (i.e. physical, social). Although, most studies have not found a relationship between anxiety sensitivity social concerns and suicidal ideation, there are some exceptions (Capron et al., 2012a; Capron et al., 2012c). Likewise, one study found a trend toward a negative relationship between anxiety sensitivity physical concerns and suicidal ideation among individuals with HIV (Capron et al., 2012d). Further work is needed clarify these equivocal extant findings. To address these issues, the current study evaluated the role of anxiety sensitivity in suicidal ideation among a large sample of college students who endorsed at least some level of past week suicidal ideation, as measured by the Beck Scale for Suicide Ideation (BSS; Beck and Steer, 1991). Based on the strong association found between anxiety sensitivity cognitive concerns and suicidality in existing studies, we hypothesized that global anxiety sensitivity would be a significant predictor of suicidal ideation. Further, we predicted that among the anxiety sensitivity subfactors, only the cognitive concerns facet would have a significant association with suicidal ideation. The other primary goal of this study was to test the depression distress amplification model in this group of college students with elevated risk of current suicidality. Based on previous work (Capron et al., 2013b), we hypothesized that the depression distress amplification model (i.e. an interaction between anxiety sensitivity cognitive concerns and depression) would also predict suicidal ideation in this sample. Specifically, it is expected that higher levels of depression and anxiety sensitivity cognitive concerns will interact to predict increased suicidal ideation.

2. Methods

2.1. Participants

Data were collected from 1200 students at a large southeastern university. For the purposes of the current study, only 721 participants who reported some level of past week suicidal ideation (i.e., BSS > 0) were included. Demographic characteristics of the sample were as follows: 77.5% female, 75% European American, 12% African–American, 4% Hispanic, 3% Asian–American, and 5.7% "Other". The average age was 20 years (S.D.=1.23) and the sample consisted of college freshmen (30.0%), sophomores (24.0%), juniors (23.5%), and seniors (22.5%).

2.2. Measures

Anxiety Sensitivity Index (Reiss et al., 1986)

The anxiety sensitivity index (ASI) is a 16-item self-report instrument designed to measure the degree to which individuals are concerned about the potential negative effects of experiencing anxiety symptoms. Sample items include: "Unusual body sensations scare me" (anxiety sensitivity physical concern), "When I cannot keep my mind on a task, I worry that I might be going crazy" (anxiety sensitivity cognitive concern), and "It is important to me not to appear nervous" (anxiety sensitivity social concern). Respondents are asked to indicate the degree to which each item applies to them using a 5-point Likert scale ranging from 0 (*very little*) to 4 (*very much*). The ASI has three lower-order factors that all load on a single higher-order factor across diverse populations (Zinbarg et al., 1997). The lower-order factors represent physical, cognitive, and social concerns, and the higher-order factor represents the global anxiety sensitivity construct. The ASI has demonstrated good internal consistency across diverse populations (Peterson, 1993), including college students (Schmidt et al., 2007a). In the current sample, the coefficient alpha was 0.87 for global anxiety sensitivity and 0.85, 0.80 and 0.38 for the physical, cognitive, and social concerns sub-factors, respectively.

Beck Depression Inventory-II (Beck et al., 1996)

The Beck depression inventory (BDI-II) is a widely used 21-item self-report measure of severity of depressive symptoms experienced within the past two weeks. Each item measures a distinct depressive symptom (e.g., sad mood) through a series of four statements that reflect greater severity as they progress (e.g., "I do not feel sad," "I feel sad," "I am sad all the time," or "I am so sad or unhappy that I can't stand it"). Responses on the items are summed to derive a total scale score, with higher scores suggestive of higher depressive symptom severity. Good estimates of internal consistency and concurrent validity have been demonstrated in clinical and non-clinical samples (Bisconer and Gross, 2007; Naragon-Gainey et al., 2009). For example, Freedenthal et al. (2011) found that scores on BDI-II were correlated with measures of suicide risk and other measures of negative emotional states. In the current study, item 9 (suicidal ideation) was removed from the analyses to prevent representation of suicidal ideation in both the independent and dependent variable. The estimate of internal consistency reliability of the BDI-II among university undergraduates was 0.93.

Beck Scale for Suicide Ideation (Beck and Steer, 1991)

The Beck scale for suicide ideation (BSS) is a 21-item self-report questionnaire measuring individual's thoughts, attitudes and intentions regarding suicide, including attitudes toward living and dying, expected reactions to these thoughts, and frequency of past suicidal behavior. The first 19 items consist of three options graded according to the intensity of the suicidality and are summed to yield a total score, which ranges from 0 to 38. The items provide participants with three response options (e.g., "I have no wish to die", "I have a weak wish to die", or "I have a moderate to strong wish to die") and are rated on a scale from zero to two, based on intensity. Scores are summed to provide a total score indicative of suicide risk. The BSS is a valid and reliable measure in various populations (Miller et al., 2001), including college students (Cukrowicz et al., 2011). In the current study, the internal consistency reliability estimate was 0.84.

Suicide Anger Expression Inventory-28 (Osman et al., 2010)

The suicide anger expression inventory-28 (SAEI-28) is a self-report instrument assessing anger-expression and suicide-related constructs. Suicidal ideation was measured using the suicide rumination subscale, which consists of seven items from the total 28-item SAEI. Participants were asked to rate the items from 1 (*Not at all true of me*) to 5 (*Extremely true of me*). In the initial validation study, the suicide rumination subscale was the strongest predictor of suicidal ideation and behavior among the four subscales (Osman et al., 2010). In fact, this subscale appears to be a measure of suicidal ideation versus suicide rumination, as the ruminative quality of each thought is not directly assessed. Sample items on the suicide rumination subscale include both passive and active suicidal ideations: "I find myself wishing that I was dead", "I feel the urge or impulse to hurt myself physically", and "I seriously consider ending my life." The SAEI-28 subscales have demonstrated good internal consistency reliability in undergraduate college students (Osman et al., 2010; Lamis and Dvorak, 2013). The SAEI-28 was utilized as the main outcome measure over the more commonly used BSS. This decision was made because a number of previous reports on the anxiety sensitivity and suicidal ideation association have used Beck scales (Schmidt et al., 2001, Capron et al., 2012b, Capron et al., 2013a). Replicating these findings with a non-Beck measure would lead to more confidence in the validity of the relationship. It should be noted that the pattern of association between the ASI subscales and suicidal ideation was the same whether using the BSS or SAEI-28. In the current study, the reliability estimate for the suicide rumination subscale was 0.93.