



The “weakest link” as an indicator of cognitive vulnerability differentially predicts symptom dimensions of anxiety in adolescents in China

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ABSTRACT

This multiwave longitudinal study examined the cognitive vulnerability-stress component of hopelessness theory to differentially predict symptom dimensions of anxiety using a “weakest link” approach in a sample of adolescents from Hunan Province, China. Baseline and 6-month follow-up data were obtained from 553 middle-school students. During an initial assessment, participants completed measures of assessing their weakest links, anxious symptoms, and the occurrence of stress. Participants subsequently completed measures assessing stress, and anxious symptoms one a month for six months. Higher weakest link scores were associated with greater increases in the harm avoidance and separation anxiety/panic dimensions, but not the physical or social anxiety dimension, of anxious symptoms following stress in Chinese adolescents. These results support the applicability of the “weakest link” approach, derived from hopelessness theory, in Chinese adolescents. Weakest link scores as cognitive vulnerability factors may play a role in the development of anxious symptoms, especially in the cognitive dimensions (e.g., harm avoidance and separation anxiety/panic). Our findings also have potential value in explaining the effectiveness of cognitive relevant therapy in treating the cognitive dimensions of anxious symptoms.

1. Introduction

The results of epidemiological studies suggest that the prevalence of anxious symptoms has risen in many countries in recent years (Ouimet, Gawronski, & Dozois, 2009); In addition, past research suggests that from early adolescence through adulthood, girls are twice as likely as boys to experience anxiety (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998). A greater increase in the prevalence of anxious symptoms has been reported in China, from 4.4% in 2001 (Taouk, Lovibond, & Laube, 2001) to 29.4% in 2011 (Chan et al., 2012). About 40% of adolescents in China were found to experience some level of anxiety (Chan et al., 2012).

A cognitive vulnerability–stress framework, in which recent stress is considered to trigger an underlying predisposition, may be among the most promising approaches to the understanding of the causes of anxiety in adolescents. Cognitive theories of anxiety define vulnerability as a stable internal feature predisposing an individual to the development of anxiety following the occurrence of stress (Ingram, Miranda, & Segal, 1998). Such models posit that anxiety is produced by the interaction between cognitive vulnerability factors (diatheses) and

certain environmental conditions (stress) that trigger the occurrence of stress (Ingram et al., 1998). In addition, anxiety disorders are also characterized by interpretation bias, the tendency to interpret ambiguous or mildly negative cues in a negative or catastrophic manner. A number of reviews suggest that interpretation bias is a robust phenomenon associated with anxiety in both children and adults (Lewinsohn et al., 1998). From a clinical perspective, cognitive theories of anxiety have emphasized the role of biases in attentional processes in the etiology and maintenance of anxiety states. A cognitive vulnerability factor that has been frequently linked to anxiety is the tendency to negatively interpret ambiguous stimuli. Cognitively vulnerable individuals negatively interpret stress when they are confronted with certain stress, which place them at high risk of anxiety and a wide range of other negative outcomes (Ingram & Luxton, 2005; Monroe & Simons, 1991).

Building upon the cognitive vulnerability–stress framework (e.g., Beck & Clark, 1997), Abramson, Metalsky, and Alloy (1989) proposed a hopelessness theory. According to the hopelessness theory, individuals with a negative cognitive style (diathesis) are more likely than others to make negative inferences following stress. Such inferences, in turn,

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increase the likelihood that hopelessness will develop. Hopelessness has been consistently demonstrated to be a predictor of anxious and depressive symptoms, suicide ideation, suicide attempts, and suicide completion (Xiao et al., 2016). Briefly, previous research has proposed that one component of hopelessness—the expectation that one is helpless to control the outcomes of highly valued stress—is related to anxious symptoms (Xiao et al., 2016).

Nevertheless, the majority of studies addressing the diathesis-stress framework of the hopelessness theory (e.g., Abela & McGirr, 2007) have produced mixed results. One possible reason for the inconsistency of results is that many researchers have examined each of the three cognitive vulnerabilities in isolation, without considering possible relationships among them. Abela and Sarin (2002) propose that the best solution to this problem is based on the analogy “a chain is only as strong as its weakest link”. In other words, an individual’s cognitive vulnerability is determined by his or her most negative attributional style (Abela & Sarin, 2002). The weakest link approach, originally developed from the hopelessness theory, attempts to conceptualize relationships among multiple cognitive vulnerability factors (Abela & Sarin, 2002). Thus, researchers testing the hopelessness theory should assess all three cognitive vulnerabilities together and determine an individual’s overall degree of vulnerability based on the most vulnerable factor. Therefore, according to this hypothesis, when testing the cognitive vulnerabilities, researchers should (1) assess all three cognitive vulnerabilities and (2) determine each participant’s degree of vulnerability using his/her most depressogenic one.

The weakest link approach has performed well in tests of the hopelessness theory in relation to depression, and subsequent research has provided equally strong support for this hypothesis in youth (Abela & McGirr, 2007; Abela & Payne, 2003; Abela and Scheffler, 2008; Abela & Scheffler, 2008) and adults (Abela, Aydin, & Auerbach, 2006), as well as in Western and Chinese samples (Xiao et al., 2013). Although the weakest link theory was not independently replicated in studies examining the hopelessness theory in relation to anxiety, previous research has determined that anxiety and depression overlap extensively at the symptom and disorder levels and have similar cognitive vulnerability characteristics. Reason for the possibility is that anxiety and depression commonly co-occur at the level of anxious and depressive mood, symptoms, and disorder from samples of children through adults (Alloy et al., 2012). The fact that emotional symptoms and disorders overlap leads to difficulties in testing causal models for either depression or anxiety. Given the pattern of high overlap between anxiety and depression, a researcher cannot be certain whether a putative causal factor or mechanism for specific symptoms (e.g., depression) is, in fact, contributing to those particular symptoms unless both anxiety and depression are assessed properly. The common etiology hypothesis proposes that depression and anxiety commonly co-occur because they share etiological factors. Consequently, the weakest link theory, originally developed from the framework of cognitive vulnerability to depression, may be applicable to anxiety.

Concerns about multidimensional models of the anxiety disorders in DSM-V, the same anxiety score may be assigned to heterogeneous individuals with different symptom patterns and only partial overlap in criteria fulfillment (Wakefield, 2016). These multidimensional symptoms may have diverse etiological pathways leading to anxiety. In response to dissatisfaction with available instruments, several new self-report measures of anxiety in youth have been introduced in recent years including the Screen for Child Anxiety Related Emotional Disorders (SCARED), Spence’s Children’s Anxiety Scale (SCAS) and the Multidimensional Anxiety Scale for Children (MASC). The MASC contains 39 items contains four factors: Physical Symptoms (tense/somatic); Harm Avoidance (perfectionism/anxious coping); Social Anxiety (humiliation/performance fears) and Separation Anxiety/Panic. This homogeneous measure of anxious symptom dimensions may be useful to identify multiple etiological pathways that lead to anxiety.

1.1. Goals of the current study

The primary objective of the current study was to examine the “weakest link” as an indicator of cognitive vulnerability to the development of homogeneous anxious symptom dimensions in adolescents in China. Whereas prior research (e.g., Bienvenu et al., 2004; Tackett et al., 2008) has relied on dichotomous representations of anxiety disorders, the current study is the first to evaluate how the “weakest link” in cognitive vulnerability predicts dimensions of anxiety in a large adolescent sample. In line with the vulnerability-stress hypothesis of the weakest link theory (Abela & Sarin, 2002), we hypothesized that a higher weakest link score would be associated with greater increases in anxious symptoms after the occurrence of stress. Moreover, based on the existing literature, these multidimensional symptoms may have different and multiple etiological pathways that lead to anxiety (Struijs, Groenewold, Oude & De, 2013). We expected that the weakest link, as a cognitive vulnerability, would moderate the relationship between stress and the “cognitive subtype” (e.g., harm avoidance and separation anxiety/panic dimensions) of anxious symptoms (Struijs et al., 2013).

2. Methods

2.1. Participants

Participants were middle-school adolescents from one public school in Hunan, China. Participants were informed that their responses would be anonymous and utilized only for the present study. Consent forms were sent to the parents of all students in participating classes, and written consent was also obtained from all participating students at the beginning of the assessment.

The final sample consisted of 553 adolescents (305 girls and 248 boys) ranging in age from 14 to 19 (mean = 16.22, SD = 0.89) years. With respect to paternal education, 46.2% of participants’ fathers completed primary school, 44.9% completed high school, 6.5% completed university, and 0.4% completed graduate school. Consent rates exceeded 95% in all classes, and all students who received parental consent also provided personal consent to participation. No missing data were observed.

2.2. Procedure

The Ethics Committee of the Second Xiangya Hospital, Central South University, approved the procedure for this study. Consent forms were sent to the parents of all students in participating classes. Consent rates were greater than 95% in all the classes. After consent forms were collected from the participants, researchers went to each school to meet with participating students. Written consent was obtained from each adolescent at the beginning of the assessment. No student who received parental consent chose not to give personal consent for their participation. During the initial assessment, students completed a demographic form and the following questionnaires: (1) the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), (2) the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997), (3) the Adolescent Cognitive Style Questionnaire (ACSQ; Hankin & Abramson, 2002), and (4) the Adolescent Stress Questionnaire (ALEQ; Hankin & Abramson, 2002). Over the subsequent 6 months, researchers conducted monthly follow-up assessments consisting of MASC and ALEQ administration at the school.

2.3. Measures

The Chinese versions of all self-reported measures were developed using the back-translation method, as described in detail elsewhere (Abela et al., 2011).

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