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Roles of emotional reactivity, intolerance of uncertainty, and negative problem orientation on developing childhood worry

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ABSTRACT

Although current literature has examined the associations between individual risk factors and the development of childhood worry, few studies have examined pathways including multiple vulnerability factors. The current study examined a specific pathway of risk towards childhood worry, examining the roles of intolerance of uncertainty and negative problem orientation on the association between emotionally reactive temperament and worry. Participants were 76 children and adolescents between ages 7 and 13 and their parents, from a community sample. Parents completed measures of child temperament, and youths completed measures of intolerance of uncertainty and negative problem orientation. Mediational analyses were conducted to examine the pathway between emotionally reactive temperament and worry. Overall, the data supported study hypotheses, and the association between emotionally reactive temperament and worry was serially mediated through intolerance of uncertainty and then negative problem orientation. These findings suggest high emotional reactivity may contribute to the development of intolerance of uncertainty, which may contribute to the development of negative problem orientation. Children with high negative problem orientation may then acquire an increased propensity to worry. Results showing a specific pathway of risk towards worry suggest a targeted approach for intervention and prevention is likely to be most efficacious.

1. Introduction

The current study aimed to examine a potential pathway of risk for the development of worry by investigating the roles of Intolerance of Uncertainty (IU) and Negative Problem Orientation (NPO) on the relation between Emotional Reactivity (ER) and worry. ER is a temperamental dimension which has been investigated as a risk factor for anxiety disorders in adults and children (Carthy, Horesh, Apter, & Gross, 2010; Strelau & Zawadzki, 2011). Adult literature has also examined the relationships between worry, anxiety, and cognitive variables such as IU and NPO (Dugas & Ladouceur, 2000; Fergus, Valentiner, Wu, & McGrath, 2015). A burgeoning field of research suggests similar associations form as children reach school-age (Comer et al., 2009; Veenman, Van Hout-Wolters, & Afflerbach, 2006). Although the associations linking ER, IU, and NPO to anxiety have been individually examined, few studies have investigated how these vulnerability factors relate to each other, especially in youth. Further, one could hypothesize and examine a specific pathway of risk by considering current understandings of when these constructs emerge developmentally. Thus, we investigated one such pathway in which IU and NPO mediate the association between ER and worry. A better understanding of the sequential pathway from established risk factors towards childhood worry will allow for targeted prevention and intervention efforts in addressing anxiety in children and adolescents.

ER refers to the characterization of an individual's emotional response, including the threshold of stimuli needed to elicit responses, as well as the intensity of the experienced emotional response (Davidson, 1998). A highly emotionally reactive individual has lower thresholds of stimuli necessary to elicit an emotional response (i.e., high emotional sensitivity), and low emotional endurance, and high temperamental ER can be observed as early as infancy (Strelau & Zawadzki, 2011). Anxious individuals appear to be highly emotionally reactive, reflected in intense and frequent negative emotional responses to perceived threat. This emotional hyper-reactivity is hypothesized to stem from biased information processing related to threat, which has been observed in anxious children and adults (e.g., Carthy et al., 2010; Richards & French, 1992). Indeed, studies have illustrated that anxious children are more likely to report greater negative emotional intensity in vignettes that elicit worry and anger, and in response to ambiguous situations (Suveg & Zeman, 2004). High ER has also been posited to lead to using worry as a maladaptive coping strategy. Newman and Llera (2011) proposed that individuals with generalized anxiety disorder (GAD),

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who are highly emotionally reactive, may use worry as a strategy to avoid high negative emotional contrast. That is, individuals who are highly emotionally vulnerable to unexpected negative events, utilize worry as a method to avoid unexpected negative emotional shifts (Newman & Llera, 2011). Gramszlo and Woodruff-Borden (2015) found an association between ER and worry in children as well, where high ER was associated with high worry levels.

Recent research has focused on disentangling cognitive components associated with maintaining worry in school-aged children. Two such components are IU and NPO. IU is a broad construct reflecting negative beliefs regarding uncertainty, and the tendency to interpret ambiguous events as threatening (Buhr & Dugas, 2006; Dugas, Gagnon, Ladouceur, & Freeston, 1998). It has been conceptualized as a trait-like construct affecting an individual on a cognitive, emotional, and behavioral level, with two dimensions: prospective IU, the cognitive appraisal of threat in uncertainty, and inhibitory IU, the behavioral inhibition arising under uncertainty (Carleton, Norton, & Asmundson, 2007; McEvoy & Mahoney, 2013). IU significantly predicts worry in youth, and has also been able to discriminate between clinical and nonclinical worriers (Comer et al., 2009; Fialko, Bolton, & Perrin, 2012; Kertz & Woodruff-Borden, 2013). NPO is conceptualized as a disruptive stance towards problems including threat perception when faced with problems, as well as doubt and perceived inefficacy over one's problem-solving ability (Frauenknecht & Black, 2004). While fewer studies have investigated NPO in youth, extant findings show NPO is a unique predictor of worry, and children with GAD have significantly higher levels of NPO than non-anxious children (Donovan, Holmes, & Farrell, 2016; Kertz & Woodruff-Borden, 2013).

Conceptually, there are compelling reasons to hypothesize that temperamental ER is related to both IU and NPO. For instance, anxious children have heightened ER, particularly in perceiving and responding to threat (Suveg & Zeman, 2004). Being predisposed to greater emotional reactivity in response to threatening situations broadly could presumably lead to cognitive processes being oriented towards domain specific negative beliefs (i.e., about uncertainty, problems). This paper aimed to examine one potential pathway of risk for the development of worry, by investigating the effect of ER on IU and NPO, and subsequently worry, in a mediational model. First, in line with extant literature, we hypothesized there will be an association between ER and worry, where participants with high ER are more likely to have higher worry levels. We also hypothesized that IU and NPO will each mediate the relationship between ER and worry, given developmental findings showing ER to be a temperamental dimension observable from a young age, as well as previous findings showing IU and NPO to be risk factors for worry. Following these initial hypotheses, we hypothesized that a path of serial mediation will be significant, where IU and NPO mediate the relationship between ER and worry sequentially. According to the problem-solving process by D'Zurilla and Goldfried (1971), problem orientation is the general response set which sets the stage for subsequent specific behavioral problem solving skills. An individual with high trait IU, experiencing augmented distress under uncertainty, could foster negative self-belief about their efficacy in problem-solving (i.e., high NPO), due to the uncertain nature of problems and their consequences. This negative self-belief may shape the individual's general response set towards problems, and be reinforced by paralysis from action experienced during uncertainty stemming from high IU. Ultimately this may lead to worry being utilized as a maladaptive problem solving or coping strategy.

2. Methods

2.1. Procedure and participants

Participants for this study were recruited from the community through flyers in locations such as schools, libraries, and coffee shops, as a part of a larger study about anxiety and families. Exclusion criteria for youth included being younger than 7 years or older than 13 years at study onset, having developmental disabilities, and living with non-biological parents. Participants of these ages were selected to capture the emergence and development of worry, IU and NPO. Eligible families completed age appropriate measures of anxiety, IU, and NPO. Both child assent and parent consent were obtained prior to participation in the study. No monetary compensation was given for participation.

A total of 76 parent-child dyads completed the measures. There were 38 male child participants, and 38 female participants. Children were between 7 and 13-years-old ($m = 9.68$, $SD = 1.79$). Most participating parents were mothers (90.80%), with a mean age of 39.59 ($SD = 5.58$). Most participants were self-described as European-American (78.95%) Further, most households' annual income was greater than $60,000 (69.10%), and most parents reported being married (78.95%).

2.2. Measures

2.2.1. Intolerance of Uncertainty Scale-Child (IUS-C; Comer et al., 2009)

The IUS-C was developed as a developmentally appropriate adaptation of the adult Intolerance of Uncertainty Scale. It has been used to measure reactions to ambiguous or uncertain situations (Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994). The IUS-C has 27 items. Participants indicate how accurately a statement describes them using a five-point scale accompanied by verbal anchors (e.g. “not at all”). The IUS-C has demonstrated excellent internal consistency in both community ($\alpha = 0.91$) and clinical ($\alpha = 0.94$) samples aged 7 to 17 years (Comer et al., 2009). The IUS-C demonstrated excellent internal consistency in the current sample, with a Cronbach's Alpha of $\alpha = 0.93$.

2.2.2. Penn State Worry Questionnaire for Children (PSWQ-C, Chorpita, Tracey, Brown, Collica, & Barlow, 1997)

The revised PSWQ-C is a developmentally appropriate adaptation of the Penn State Worry Questionnaire for Adults (Pestle, Chorpita, & Schiffman, 2008). The PSWQ-C contains 14 items, where higher scores indicate a greater tendency to worry. Participants indicate how typical a statement is for them using a four-point scale accompanied by verbal anchors (e.g. “always true”). The PSWQ-C has been shown to have high internal consistency ($\alpha = 0.89$) in youth aged 8 to 12 years (Muris, Meesters, van Melick, & Zwambag, 2001). It has also demonstrated discriminant validity between children with and without clinical worry (Chorpita et al., 1997). The PSWQ-C yielded moderate internal consistency in the current sample ($\alpha = 0.76$).

2.2.3. Negative Problem Orientation Questionnaire (NPOQ; Robichaud & Dugas, 2005)

A developmentally appropriate adaptation of the NPOQ was utilized for the current study. The NPOQ has been used to assess an individual's set of dysfunctional attitudes towards problem solving. There are a total of 12 statements, where participants indicate how accurately a statement describes them using a five-point scale accompanied by verbal anchors (e.g. “not at all true for me”). The NPOQ has been shown to have excellent internal consistency ($\alpha = 0.92$), and high test-retest reliability after five weeks ($r = 0.80$, $p < .01$) (Robichaud & Dugas, 2005). It has also demonstrated convergent and discriminant validity when compared to measures of depression, anxiety, and problem solving ability. The adapted NPOQ yielded high internal consistency in the current sample ($\alpha = 0.89$).

2.2.4. The Temperament in Middle Childhood Questionnaire (TMCQ; Simonds & Rothbart, 2004)

The TMCQ is a parent-report of temperament in youth. The TMCQ was based on the Children's Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001), a well-established caregiver report measure of temperament for children. The TMCQ contains 16 scales comprised of 157 items. For this study, the Falling Reactivity (FR)