Development of a scale to evaluate young children’s responses to uncertainty and low environmental structure

Amanda L. Sanchez a,*, Danielle Cornacchio a, Tommy Chou b, Ovsanna Leyfer b, Stefany Coxe a, Donna Pincus b, Jonathan S. Comer a

a Department of Psychology, Florida International University, 11200 S.W. 8th Street, Miami, FL 33199, United States
b Department of Psychological and Brain Sciences, Boston University, 64 Cummington Mall, Boston, MA 02215, United States

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A B S T R A C T

Intolerance of Uncertainty (IU), defined as the dispositional interpretation of uncertain or ambiguous events as stressful and problematic, has been linked to excessive worry and other anxiety-related problems in adults and youth. IU has been conceptualized as a vulnerability factor for excessive worry and anxiety, but the historical absence of a supported measure of IU in young children has hampered longitudinal research needed to evaluate temporal relationships between IU and anxiety and the differential developmental pathways of IU leading to different anxiety disorders and depression. The present study evaluated the psychometric properties of a newly developed 17-item parent-report measure of children’s Responses to Uncertainty and Low Environmental Structure (i.e., the RULES questionnaire). We examined the preliminary structure, reliability, and validity of the RULES within a treatment-seeking sample of children aged 3–10 (N = 160) with anxiety. Findings from an exploratory factor analysis supported a one-factor model that retained all 17 items. The RULES demonstrated strong internal consistency, and predictive, convergent, and divergent validity. In this early childhood sample, the RULES also showed stronger associations with anxiety than did a previously supported measure of IU developed for older youth, and showed preliminary sensitivity to treatment-related change. Findings provide preliminary psychometric support for the RULES as a parent-report measure of children’s responses to uncertainty and low environmental structure that may inform etiologic models of anxiety.

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1. Introduction

Intolerance of Uncertainty (IU), defined as the dispositional interpretation of uncertain or ambiguous events as stressful and problematic, characterizes individuals who find uncertainty distressing and has been shown to lead to negative emotional, behavioral and cognitive responses (Dugas, Buhr, & Ladouceur, 2004; Dugas, Gosselin, & Ladouceur, 2001). Carleton (2016a) has further clarified the conceptualization of IU as one’s inability to tolerate a feared response to perceived uncertainty, a response derived from an underlying fear of the unknown.

Considerable research with adults has evaluated the role of IU in the psychopathology of anxiety and its disorders, and has proposed IU as a risk factor for the development and maintenance of excessive worry and anxiety (Dugas, Gagnon, Ladouceur, & Freeston, 1998; Dugas, Laugesen, & Bukowski, 2012). The role of IU as a risk factor for problematic worry and anxiety has been preliminarily supported by research in adults showing that IU can temporally precede anxiety and that experimentally manipulating and increasing IU can lead to higher levels of worry (Ladouceur, Gosselin, & Dugas, 2000). Although IU was originally conceptualized as specifically linked with worry and generalized anxiety disorder (GAD), accumulating evidence in adults supports IU as a transdiagnostic factor relevant across anxiety disorders and related conditions (Boswell, Thompson-Hollands, Farchione, & Barlow, 2013; Carleton, 2016b; Mahoney & McEvoy, 2012; McEvoy & Mahoney, 2012). This conceptualization along with current research has positioned IU as a transdiagnostic and trans-therapy process of change in the effective treatment of adult anxiety and related problems. For example, McEvoy and Erceg-Hurn (2016) found that treatment-related changes in IU predicted reductions in repetitive negative thinking in a range of anxiety disorders and depression. Therefore, it has been recommended that IU be an...
explicit component of Cognitive Behavior Therapy (CBT) for adult anxiety and neuroticism (Carleton, 2016).

Despite extensive examination of IU in adult populations, evaluation of IU in childhood is still in its infancy (Shihata, McEvoy, Mullan, & Carleton, 2016). This is surprising given the central role that IU has been proposed to play in the etiology of anxiety disorders, and the fact that most anxiety disorders first onset in youth (Comer & Olsson, 2010; Merikangas et al., 2010). In recent years, however, researchers have begun to evaluate the role of IU in middle childhood and adolescence, prompted in large part by the development of a measure of IU demonstrating favorable psychometric properties in these age ranges (i.e., the Intolerance of Uncertainty Scale for Children, IUISC; Comer et al., 2009). The IUISC is a downward extension of the Intolerance of Uncertainty Scale for adults (IUSC: Buhr & Dugas, 2002), and research utilizing the IUISC has found that, as in adult populations, across child anxiety disorders IU is associated with higher clinical severity, regardless of specific anxiety diagnosis (Read, Comer, & Kendall, 2013). In a longitudinal study of adolescent anxiety Dugas et al. (2012) found that IU may play an etiologic role in the development of adolescent worry, and that IU and worry mutually influence one another over time. Research has begun examining environmental risk factors for child IU, such as parenting. Ziomke and Young (2009), for example, found that anxious parenting may be related to increases in child IU and, in turn, increases in child anxiety. Also, Sanchez, Kendall, and Comer (2016), documented significant links between maternal IU and child IU and found that this association may mediate the intergenerational transmission of anxiety in families. Similar to research on adult IU, research with youth samples finds IU to be a transdiagnostic factor across emotional disorders in middle childhood and adolescence (Cowie, Clementi, & Alfano, 2016; Boelen, Vrintsen, & van Tulder, 2010). Despite these preliminary advances in the study of IU in youth, more research in younger children is needed to assess factors that may contribute to the development of IU and causal links with the development and maintenance of anxiety.

Importantly, the IUISC parent- and child-report was developed for youth in middle childhood and adolescence, but not for younger children whose IU may manifest differently. Young children may not be able to provide valid self-reports, on IUISC items such as “It’s not fair that we can’t predict the future,” “One should always think ahead to avoid surprises,” “Other kids have less doubts than I do,” and “I always want to know what will happen to me in the future” assess phenomena that draw on meta-cognitive abilities, perspective-taking, and future-oriented cognition that do not emerge until later stages of cognitive development (Flavell, Green, & Flavell, 2000; Flavell, Miller, & Miller, 2001). Parent-report IUISC items such as “My child thinks it’s unfair that we can’t predict the future” and “My child believes that being uncertain means that he/she is not first rate” may also yield invalid responses as parents may not have access to such internal experiences related to uncertainty in their children. Indeed, parent-child agreement on anxiety symptoms is particularly poor for unobservable child phenomena (Comer & Kendall, 2004). Not surprisingly, despite the overall positive psychometric properties of the parent- and child-reports of the IUISC for youth in middle childhood and adolescence, the IUISC parent-report in children younger than 9 years old has yielded less favorable psychometric properties, including relatively poorer convergent validity (Comer et al., 2009).

While research in adults has prospectively proposed IU as a risk factor for anxiety, the historical absence of supported measures of IU in early childhood has hampered important longitudinal research needed to evaluate temporal relationships between IU and anxiety. In developmental research, behavioral observations of infant responses to unfamiliarity have been found to suggest later impairment in emotional and behavioral functioning (Kagan, 1997).

Yet, these tasks that assess younger children’s temperament and responses to novel or uncertain situations often introduce potential confounds (e.g., stranger anxiety) and measure inhibition in children at earlier stages of development than anxiety disorders commonly onset. Additionally, structured behavioral observation may not be feasible in many applied settings.

To date, there are no resource-efficient parent-report tools that specifically measure children’s responses to uncertainty and low environmental structure in early childhood when anxiety disorders begin to declare themselves. Given that 9% of preschool youth suffer from an anxiety disorder (Egger & Angold, 2006), construction of a developmentally sensitive parent-report measure of young (preschool and elementary school-aged) children’s behavioral and emotional responses to uncertainty (rather than cognitive interpretations of uncertainty as assessed in older youth and adults) is critical to inform clinical practice in applied settings with young children as well as to support longitudinal research evaluating matters of temporal sequencing between IU and child anxiety. Indeed, Shihata et al. (2016) have specifically called for focused research on the assessment and development of IU in children in order to improve our understanding of the transdiagnostic nature of IU. Such work is needed to inform differential pathways of IU leading to various anxiety and mood problems, to assess mediators and moderators of etiologic links between IU and psychopathology, and to examine environmental, genetic, and biological factors that may lead to IU (Shihata et al., 2016). Understanding the development of IU and its temporal relationship to anxiety can, in turn, inform the development of preventative interventions for children at risk for developing mental health problems.

The present study evaluated the psychometric properties of a newly developed parent-report measure of young children’s Responses to Uncertainty and Low Environmental Structure (i.e., the RULES). Given more restricted cognitive abilities in younger children, the RULES focuses on behavioral and emotional responses to uncertainty and is therefore not simply a downward extension of previous IU measures in adolescents and adults. Further, due to the particular importance of structure in young children’s lives, and given that poorly structured environments can amplify uncertainty, unpredictability, and stress for children, the RULES incorporated items examining children’s responses to low environmental structure. We examined the preliminary structure, reliability, and validity of the RULES within a heterogeneous sample of treatment-seeking younger children with anxiety. We further evaluated the differential utility of the RULES versus the IUISC in predicting anxiety in this younger child sample. Following exploratory factor analysis to identify any items from the initial item pool to be dropped, we predicted the retained RULES items would collectively show acceptable internal consistency (i.e., >0.80), would show a large association with parent-report IUISC scores, would significantly predict scores on measures of anxiety and internalizing problems, and would not be associated with externalizing problems (e.g., aggression, attention problems, and oppositional-defiant problems) after accounting for associations with anxiety. Given reduced psychometric support for the parent-report IUISC in younger child samples, we further predicted that in this sample of youth below the age of 10 the RULES (which was developed specifically for early childhood) would account for more variance in child anxiety problems than the existing parent-report IUISC.

2. Methods

2.1. Participants

Participants, N = 160; 55.6% female, were children between the ages of 3 and 10 years, M = 6.46, SD = 1.7, and their moth-
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