

Anxiety in Youth With and Without Autism Spectrum Disorder: Examination of Factorial Equivalence

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Although anxiety is frequently reported among children and adolescents with autism spectrum disorder (ASD), it has not been established that the manifest symptoms of anxiety in the context of ASD are the same as those seen in youth without ASD. This study sought to examine the metric and latent factor equivalence of anxiety as measured by the Multidimensional Anxiety Scale for Children, parent-report (MASC-P) and child-report (MASC-C), in youth with anxiety disorders and ASD with intact verbal ability ($n = 109$, $M_{age} = 11.67$ years, 99 male) and a gender-matched comparison group of typically developing (TD) children and adolescents with anxiety disorders but without ASD ($n = 342$, $M_{age} = 11.25$ years, 246 male). Multigroup factorial invariance (MFI) using structural equation modeling indicated equivalent latent factors in youth with and without ASD on the MASC-C (metric invariance). However, the item means and covariances along with the relations among the factor scores were different for the youth with ASD (i.e., lack of evidence for scalar or structural invariance). The MASC-P data did not fit the measure's established structure for either the ASD or TD group, and post-hoc exploratory factor analysis revealed a different factor structure in the ASD group. Findings suggest that the MASC-C may not measure identical constructs in anxious youth with and without ASD. Further research on the structure of the MASC in clinical samples is warranted.

Keywords: anxiety; autism; assessment; invariance; MASC

ANXIETY SYMPTOMS ARE AMONG THE MOST COMMON, and often impairing, symptoms affecting children and adolescents (herein called youth unless distinctions need to be made) with autism spectrum disorder (ASD) (van Steensel, Bogels, & Perrin, 2010; White, Oswald, Ollendick, & Scahill, 2009b). Approximately 40% of youth with ASD have a comorbid anxiety disorder (van Steensel et al., 2010). The presence of comorbid anxiety compounds socialization difficulties and contributes to greater functional impairment (Chang, Quan, & Wood, 2012; Myles, Barnhill, Hagiwara, Griswold, & Simpson, 2001). However, it is unclear whether the manifestation of anxiety in youth with ASD is the same as anxiety seen in typically developing (TD) youth (Ollendick & White, 2012; Wood & Gadow, 2010). In other words, it is unknown if the underlying construct of anxiety in youth with ASD is equivalent to what is seen in TD youth. The purpose of the present study was to assess the structure of anxiety and its measurement in youth with ASD, compared to TD youth, using a commonly administered child- and parent-report measure of anxiety.

In their review of the presentation and classification of anxiety in ASD, Kerns and Kendall (2012) hypothesized that anxiety disorders can co-occur in people with ASD and concluded they are separable from ASD rather than being a phenomenon of ASD. They speculated that symptoms of anxiety in ASD may be atypical, or distinct, from anxiety as it presents in people without ASD. This presents a challenge for how to best conceptualize anxiety in people with ASD since, to be truly "comorbid" some argue that the anxiety disorder should not only be separable from the ASD itself, but also resemble the disorder as it presents in people without ASD (Wood & Gadow, 2010). The requirement that phenotypic presentation of a disorder in comorbid form be identical to its presentation in isolation is valid, although historically it has been suggested that a pattern of comorbidity may in fact constitute a unique and meaningful syndrome, such that symptoms might manifest and respond (to treatment) differently in the comorbid syndrome than would be expected from either disorder in isolation (Caron & Rutter, 1991). Kerns and Kendall emphasized the need for the validation of measures with which to assess anxiety in people with ASD. In commentary, Ollendick and White (2012) remind us that there exists no such thing as a "valid measure"; rather, the validity of any psychological measure is based on its intended use. Just because a measure has been established to be reliable and valid for measurement of anxiety in TD children, for instance, we cannot assume its reliability or validity for youth with ASD.

Considerable research has informed best practices for the assessment and diagnosis of anxiety disorders in children and adolescents (AACAP, 2007; Silverman & Ollendick, 2005), but there is little research on the degree to which commonly used measures of childhood anxiety are reliable and valid for use with youth who have ASD without comorbid intellectual disability. This situation is concerning given increasing recognition that anxiety is a common co-occurring problem in this population. Sensitive and valid measures of anxiety are imperative to the science of treatment development and outcome research (Scahill, 2012). Recently, efforts have been made to develop such measures. For example, Hallett and colleagues (2013) examined a 20-item anxiety scale (Sukhodolsky et al., 2008) that was adapted from the Child and Adolescent Symptom Inventories (CASI; Gadow & Sprafkin, 1998, 2002). Using data from a large sample ($n = 445$) of youth with ASD, Hallett et al. (2013) concluded that the CASI-Anxiety Scale measures a unique construct separate from ASD severity. In a recent structural equation modeling study, parent, child, and diagnostician reports of anxiety severity

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