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Assessment of adolescent optimism: Measurement invariance across gender and race/ethnicity

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ABSTRACT

Introduction: Optimism is viewed as an important resource for resilience and is associated with various wellbeing outcomes, yet few measures of optimism have been validated for use with adolescents. The aim of this study was to (a) test the factor structure invariance of the School Success Profile *Success Orientation* scale across gender and four racial/ethnic groups and (b) estimate group-level differences in optimism.

Methods: Data from a diverse sample of adolescents ($N = 2063$; mean 12.3 years; 52% female) from the southeastern United States were examined using multiple-group confirmatory factor analysis. Models for configural, metric, and scalar invariance were tested using WLSMV estimation in Mplus.

Results: Confirmatory factor analysis supported the hypothesized one-factor model and indicated scalar invariance across gender and the four racial/ethnic (i.e., African American, Caucasian, Hispanic/Latino, Native American) groups. Cross-group comparisons of latent factor means indicated statistically significant differences in self-reported optimism. Female respondents reported higher optimism than males. Among the four racial/ethnic groups, African American youth reported the highest optimism levels. Native American youth reported higher optimism than Caucasian and Hispanic/Latino youth.

Conclusions: Results suggest the *Success Orientation* scale is appropriate for many assessment and evaluation purposes, including the assessment of optimism across gender and race/ethnicity and the investigation of substantive questions regarding cross-cultural differences in adolescents' expectations of the future.

Optimism – defined as holding positive expectations about one's future – and associated positive psychology constructs have emerged as important factors in our understanding of human functioning and well-being across numerous areas (Carver & Scheier, 2014; Forgeard & Seligman, 2012). Several researchers have documented an association between optimism and positive developmental outcomes for adolescents (e.g., Snyder et al., 1997; Worrell & Hale, 2001), highlighting the importance of understanding the development, correlates, and consequences of an optimistic outlook among adolescents. Efforts to advance this understanding, however, are hampered by measurement limitations.

Few scales have been developed to measure optimism with youth, and the psychometric features of the few existing scales have not been rigorously tested. Because both practitioners and researchers work with adolescents from diverse groups and often wish to make cross-group comparisons, the validity of a measure across groups is especially important. Evidence of measurement invariance –

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the psychometric property of a measure that indicates the same underlying construct is being measured in the same way across groups or across time – is a prerequisite for meaningfully addressing numerous substantive questions, such as whether optimism levels differ across demographic groups or whether an intervention contributed to changes in optimism over time. Measurement invariance of a scale should not be assumed; rather, invariance testing is increasingly recognized as an important step in the development and validation of all latent construct measures, not just measures translated across different languages (Dimitrov, 2010; Sass, 2011). As such, the current study seeks to advance the understanding of optimism and our ability to assess it by testing the factor structure and measurement invariance of a scale specifically designed to measure optimism among youth and adolescents.

1. Background

Many studies of optimism are conducted in the medical context with adult samples. For example, higher levels of optimism in adults are associated with lower rates of cardiovascular disease and cortisol response (Forgeard & Seligman, 2012), longer survival after cancer diagnosis (Allison et al., 2003), and improved recovery after surgery (Scheier, Matthews, & Owens, 1989). Beyond the medical context, recent reviews and meta-analysis found that optimism in adults is associated with a variety of psychological and physical well-being indicators (Alarcon, Bowling, & Khazon, 2013; Carver, Scheier, & Segerstrom, 2010). For example, optimism is negatively associated with anxiety, depression, and risk-taking; optimism is positively associated with persistence in tasks; goal pursuit; relationship quality; the type and efficacy of coping efforts; life satisfaction; and general psychological well-being and physical health (Alarcon et al., 2013; Carver et al., 2010).

Notably, similar findings extend to studies of adolescents. Optimism is positively associated with adolescents' self-esteem (Puskar et al., 2010; Smokowski, Evans, Cotter, & Webber, 2014) and use of healthy coping strategies (Carver et al., 2010). Among adolescents, optimism is inversely associated with stress (Finkelstein, 2006), depressive symptoms (Ames, Rawana, Gentile, & Morgan, 2015), hopelessness (Chang & Sanna, 2003), externalizing behaviors (Smokowski et al., 2014), substance use (Finkelstein, 2006; Rawana & Ames, 2012), and risky sexual behaviors (Carvajal, Garner, & Evans, 1998).

In a prospective study, adolescents with high levels of optimism at baseline were less likely than low-optimism youth to experience the onset of depressive symptoms, heavy substance use, or antisocial behavior in the 12 months following baseline, suggesting a potential protective effect (Patton et al., 2011; SAMHSA, 2015). Other research supports this possibility of a buffering or protective role. For example, among youth who were exposed to high levels of stress, positive expectations for the future differentiated between resilient and non-resilient youth (Wyman, Cowen, Work, & Kerley, 1993). In fact, optimism may be an especially important protective factor for youth who encounter structural barriers to success, such as barriers related to socioeconomic status or racial/ethnic minority group membership (McCabe & Barnett, 2000; Meece & Kurtz-Costes, 2001; Smokowski et al., 2014).

As such, optimism is a logical target of many prevention and intervention efforts by counselors, psychologists, social workers, and other professionals (Carver et al., 2010; Meevissen, Peters, & Alberts, 2011). Interventions targeting outcomes as varied as depression (Gillham, Shatte, Reivich, & Seligman, 2002; Seligman, Schulman, & Tryon, 2007) and school connectedness (Oyserman, Terry, & Bybee, 2002) have hypothesized optimism as the mechanism by which the interventions operate.

Although these findings among adolescents are promising, the majority of investigations of optimism have focused on adults. This limitation in the literature is likely due in part to the scarcity of measures designed and validated for use with youth and adolescents. For example, studies with adolescent samples frequently measure optimism with the Life Orientation Test – Revised (LOT-R; Scheier, Carver, & Bridges, 1994), a scale developed for use with adults. Although numerous studies have investigated the factor structure and other psychometric properties of the LOT-R among adult samples (e.g., Bieda, Schonfeld, Brailovskaia, Zhang, & Margraf, 2017; Glaesmer et al., 2012; Steca, Monzani, Greco, Chiesi, & Primi, 2015), relatively little is known about the appropriateness of using the measure with adolescent populations.

A small number of measures have been developed specifically for use with youth, such as the Youth Life Orientation Test (YLOT; Ey et al., 2005) and the Children's Attributional Style Questionnaire – Revised (CASQ-R; Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998; see also: Seligman et al., 1984). To date, the YLOT has demonstrated good internal consistency and test-retest reliability (e.g., Ey et al., 2005; Williams, Davis, Hancock, & Phipps, 2010); however, it has not yet been validated with diverse samples. Although the CASQ-R is widely used, the scale consistently demonstrates low reliability (e.g., Cronbach alphas generally at or below 0.60) and the only study (to our knowledge) to examine the scale's factor structure (Lewis, Waschbusch, Sellers, Leblanc, & Kelley, 2014) found evidence the factor structure is inconsistent with the scale's underlying theory and, in fact, may vary based on the valence of the items (i.e., positively- and negatively-worded items). Based on these concerns, researchers have cautioned against use of the CASQ-R, highlighting the need for scales with stronger psychometric properties (Lewis et al., 2014).

This study aims to help address this need by testing the psychometric properties of the School Success Profile *Success Orientation* scale (SSP; Bowen & Richman, 2008) which was specifically designed to measure optimism among youth and adolescents. A self-report survey package designed for use with middle- and high-school youth, the SSP includes several scales that may be administered independently, as a whole, or in various combinations to assess aspects of youth's social environments (e.g., family, peers, school, neighborhood), health, and overall well-being. Although psychometric properties have been established for most SSP scales (Bowen, Rose, & Bowen, 2005), the *Success Orientation* scale was added during a 2008 revision of the SSP and psychometric properties have yet to be established in the published literature. Given the scale's brevity and its development specifically for use with youth, the SSP *Success Orientation* scale can potentially fill an important gap in our ability to assess optimism among adolescents.

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