

Testing Invariance of Ethnic-Racial Discrimination and Identity Measures
for Adolescents Across Ethnic-Racial Groups and Contexts

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Abstract

Ethnic-racial discrimination experiences, ethnic-racial identity (ERI) development, and attitudes toward other ethnic-racial group contact all make important contributions to individuals' health and well-being. Absent from the literature is systematic examination of whether these constructs may be measured equivalently for adolescents from different ethnic-racial groups living in different contexts. In two large ethno-racially diverse samples of high school students in the southwestern ($N = 2,136$) and midwestern ($N = 1,055$) U.S., the current study tested invariance of four widely used measures, including Adolescent Discrimination Distress Index (Fisher, Wallace, & Fenton, 2000), Ethnic Identity Scale – Brief (Douglass & Umaña-Taylor, 2015), Multidimensional Inventory of Black Identity – Teen (Scottham, Sellers, & Nguyễn, 2008), and Multigroup Ethnic Identity Measure – Other Group Orientation (Phinney, 1992). Results from multi-group confirmatory factor analyses supported configural and metric but not scalar invariance across Asian, Black, Latinx, Native, and White American adolescents, and across geographic regions for Asian, Black, and White American adolescents. Results demonstrate the utility of these measures to examine whether associations with theoretically related constructs differ across groups and regions, but specific items preclude mean-level group difference tests for certain groups. Supporting convergent validity across ethno-racially diverse adolescents in two regions, scores on ethnic-racial discrimination from peers, adults in school, and other adults in society were each positively associated with depressive symptoms; ERI exploration, resolution, affirmation, centrality, and public regard scores were each positively associated with self-esteem; and other group orientation scores were positively associated with ERI achievement.

Keywords: *discrimination, ethnic-racial identity, measurement, equivalence, adolescents*

Public Significance Statement: This study examined whether widely used measures of ethnic-racial discrimination and ethnic-racial identity (ERI) were equivalent (i.e., assessed similar constructs) for adolescents from different ethnic-racial groups and for adolescents from the same groups across different geographic regions. Results indicated measures assessed similar components of these constructs and can be used to test associations with other constructs for Asian, Black, Latinx, Native, and White American adolescents in the midwestern and southwestern U.S., but some item-response levels were non-equivalent across certain groups.

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No single majority ethnic-racial group will exist in the U.S. by 2050 (Colby & Ortman, 2015). The U.S. youth population is particularly diverse, with students of color comprising more than half of U.S. public schools (Hussar & Bailey, 2017). These continuing demographic changes construct contexts of development that pose both challenges and opportunities for youth to interact with those who are different from them in terms of race, ethnic heritage, and cultural traditions (Rivas-Drake & Umaña-Taylor, 2019). Over 75% of ethnic-racial minority youth have perceived ethnic-racial discrimination in their lifetime (Umaña-Taylor, 2016a), and more frequent exposure to these experiences predicts risk for mental and physical health problems and lower academic achievement (Benner et al., 2018; Pascoe & Smart Richman, 2009). Youth who feel more positively about their ethnicity or race tend to have less mental health problems and higher self-esteem and academic achievement (Miller-Cotto & Byrnes, 2016; Rivas-Drake, Syed et al., 2014). Of particular importance during adolescence, researchers have identified the related but distinct multidimensional constructs of *ethnic-racial discrimination* (Benner et al., 2018), *ethnic-racial identity* (Umaña-Taylor, Quintana et al. 2014), and *other group orientation* (i.e., attitudes toward other ethnic-racial group contact; Phinney, 1992) as important correlates, predictors, and outcomes to consider in supporting youth health, well-being, and development.

According to social identity theory (Tajfel & Turner, 1986), individuals' sense of identity is informed by their membership in various social groups (e.g., ethnicity-race). This group membership occurs within a broader sociohistorical context, which is marked by disparities in access to power and resources for different ethnic-racial groups in the U.S. (Devos & Banaji, 2005). Further, social identities such as ethnicity-race take on increasing importance as

adolescents gain cognitive and social maturity and are most consequential in contexts where group membership is made salient (Umaña-Taylor, Quintana et al. 2014), such as for adolescents who are members of minoritized groups (i.e., youth of color; Phinney, 1993) and who are a numerical minority in their school settings (Umaña-Taylor, 2004; Xu, Farver, & Pauker, 2015). Based on differing sociohistorical legacies of ethnicity-race and current group representation across U.S. regions, unique ethnic-racial-related experiences and identity formation (and thus the measurement needed to capture them) may emerge for youth from different ethnic-racial groups and/or for youth of the same group living in different regions (Benner et al., 2018; Xu et al., 2015). For example, lived experiences of ethnic-racial discrimination may manifest differently for Latinx American youth in a region like the Southwest, which is characterized by greater Latinx representation but also a historical legacy and contemporary examples of marginalization facing Latinx communities (e.g., Barajas-Gonzalez, Ayón, & Torres, 2018). As another example, exploring one's ethnic-racial identity may take on different meaning for Black American youth living in distinct U.S. regions, such as the Southwest and Midwest, due to varying histories of representation and awareness of racism across contexts (e.g., Leath, Mathews, Harrison, & Chavous, in press).

Despite the proliferation of empirical research informed by social identity theory (for meta-analyses and systematic reviews, see Benner et al., 2018; Rivas-Drake, Seaton et al. 2014; Rivas-Drake, Syed et al. 2014; Schwartz et al., 2014; Umaña-Taylor, Quintana et al. 2014; Yip, Wang, Mootoo, & Mirpuri, 2019), it is not well understood whether available measures of ethnic-racial-related constructs operate in equivalent fashion for adolescents from different ethnic-racial groups or living in different regions. Focusing on four widely used measures in adolescent research, the present study took important steps to fill several gaps in the literature by

testing measurement invariance (a) across five ethnic-racial groups, and (b) within the same ethnic-racial groups across two geographic regions. We examined measures of ethnic-racial discrimination (Adolescent Discrimination Distress Index; Fisher, Wallace, & Fenton, 2000), ethnic-racial identity exploration, resolution, and affirmation (Ethnic Identity Scale – Brief; Douglass & Umaña-Taylor, 2015), ethnic-racial centrality and public regard (Multidimensional Inventory of Black Identity – Teen; Scottham, Sellers, & Nguyễn, 2008), and other group orientation (Multigroup Ethnic Identity Measure; Phinney, 1992). In addition, we examined convergent validity of scores on these measures with constructs that are theoretically expected to correlate with ethnic-racial discrimination (i.e., depressive symptoms; Pascoe & Smart Richman, 2009), ethnic-racial identity (i.e., self-esteem; Umaña-Taylor, 2016b), and other group orientation (i.e., ethnic-racial identity achievement; Phinney, Ferguson, & Tate, 1997).

Why Does Measurement Invariance Matter?

Testing and establishing measurement invariance (i.e., equivalence), which involves systematically testing whether aspects of measurement (e.g., factor structures, loadings, item intercepts) can be considered equivalent across groups, is essential when engaging in research with ethno-racially diverse samples (Kim & Yoon, 2011; Knight, Roosa, & Umaña-Taylor, 2009). First, it is not advisable to interpret observed group differences in constructs of interest without evidence for invariance, as these differences may reflect inappropriate measurement rather than true latent differences (i.e., Type I error; Dimitrov, 2010). For example, if scores on a measure of ethnic-racial identity are not equivalent across ethnic-racial groups, observed mean-level group differences may reflect measurement issues instead of true differences in ethnic-racial identity across groups. Second, most measures have been developed, adapted, and used without attention to ethnic-racial invariance (exceptions noted below) and systematic error is

introduced when measures do not function similarly across groups in diverse samples or across different geographic regions in large-scale studies. This limits the precision of science focused on ethnic-racial-related constructs and inflates the chance of false null findings (i.e., Type II error). Finally, measurement invariance is preliminary work not often conducted due to factors such as limited resources or small sample sizes. Thus, when research teams work together to access, recruit, and survey large ethno-racially and geographically diverse samples, it is essential they conduct invariance tests and disseminate this work. The current study examined equivalence of four commonly used measures, outlined below, using a multi-group confirmatory factor analytic approach. Other complementary approaches for equivalence testing (e.g., item response theory analyses) are discussed elsewhere (Kim & Yoon, 2011; Putnick & Bornstein, 2016).

Ethnic-Racial Discrimination

Being treated unfairly due to one's ethnicity or race has significant negative implications for health, well-being, and academic achievement, particularly during the adolescent years (Benner et al., 2018). Youth of color disproportionately experience ethnic-racial discrimination and its sequelae (Umaña-Taylor, 2016a). Exposure to unfair treatment occurs within sociohistorical systems of power and differential access to resources for different ethnic-racial groups in the U.S. (Devos & Banaji, 2005). Though definitions of discrimination inherently acknowledge the differential power and underlying meaning of these experiences for ethnic-racial majority and minority individuals (Benner et al., 2018; Umaña-Taylor, 2016a), majority (i.e., White) adolescents are often included in these studies and they have endorsed perceiving ethnic-racial-based discrimination when surveyed (e.g., Douglass & Umaña-Taylor, 2017; Yip et al., 2019). The meaning of White adolescents' responses to ethnic-racial discrimination items and their equivalence to responses from youth of color remain open questions.

The Adolescent Discrimination Distress Index (ADDI) was originally developed in a sample of East and South Asian, Black, Latino, and White adolescents (Fisher et al., 2000). The ADDI is one of the most widely used measures to assess how often various forms of ethnic-racial discrimination occur for diverse groups of adolescents (Atkins, 2014; Yip et al., 2019). In support of a conceptual model for common sources of discrimination that arise in the contexts of adolescents' lives, the original authors found evidence for three factors using principal components analysis, including ethnic-racial discrimination from peers (i.e., *peer-based discrimination*), from adults in school (i.e., *school-based discrimination*), and from other adults in society (i.e., *institutional discrimination*; see Supplementary Materials, Table S1). The ADDI has been adapted over time to meet the needs of different research teams (e.g., Benner & Graham, 2013; Douglass & Umaña-Taylor, 2017), and ethnic-racial groups are often collapsed together for analyses, making it difficult to understand equivalence of these factors across groups and contexts. Internal consistency estimates for the 15 items in the original multi-ethnic-racial sample were low ($\alpha = .60$ for school-based and peer-based) or acceptable ($\alpha = .72$ for institutional; Fisher et al., 2000), but estimates were stronger for a modified 11-item version in a sample of White, Black, and Latino adolescents (α s .77 - .86; Douglass & Umaña-Taylor, 2017).¹ A 1-factor model has also been used in studies of Chinese American ($\alpha = .74$; Grossman & Liang, 2008), African American ($\alpha = .83$; Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007), and Latino youth ($\alpha = .71$; Benner & Graham, 2011). In a review of 16 ethnic-racial discrimination measures, Atkins (2014) identified the need for confirmatory factor analysis (CFA) validation of the ADDI factor structure in larger and more diverse samples. Though researchers have been using modified versions of the ADDI in multi-ethnic-racial samples (e.g.,

¹ Coefficient alphas from multidimensional scales tend to under- or over-estimate internal consistency (Raykov & Marcoulides, 2015).

Benner & Graham, 2013; Douglass & Umaña-Taylor, 2017), there is little consensus regarding the factor structure of ethnic-racial discrimination experiences and whether underlying dimensions of the construct should be assessed equivalently across ethnic-racial groups or U.S. geographic regions.

Theory suggests that perceiving ethnic-racial-based discrimination activates psychological and physiological threat response systems implicated in risk for depression and other health problems (Pascoe & Smart Richman, 2009). Given this theoretical rationale, and consistent with results from meta-analysis of over 200 studies (Benner et al., 2018), the current study evaluated the convergent validity of ADDI scores by examining their correlations with a measure of depressive symptoms.

Ethnic-Racial Identity

Ethnic-racial identity (ERI) is a multidimensional construct informed by adolescents' ethnic heritage and racialized experiences within a specific sociohistorical context, which includes the *process* through which adolescents' develop beliefs and attitudes about their ethnic-racial group(s) and the *content* or feelings attached to this aspect of their identity (Phinney, 1993; Sellers, Smith, Shelton, Rowley, & Chavous, 1998; Umaña-Taylor, Quintana et al., 2014). ERI development is particularly salient during adolescence and young adulthood as youth mature cognitively and socially (Umaña-Taylor, Quintana et al., 2014). Based on Erikson's (1968) psychosocial developmental theory, the process components of ERI include *exploration* (e.g., learning about traditions/history) and *resolution* (e.g., achieving an understanding; Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004). The various content components of ERI include *affirmation*, the positive affect that individuals feel toward their ethnic-racial group (also known as private regard or group esteem; Rivas-Drake, Syed et al., 2014), *centrality*, how important

ethnicity and race are to individuals' self-concept, and *public regard*, how much individuals feel that others positively view their own ethnic-racial group (Luhtanen & Crocker, 1992; Sellers et al., 1998). Among adolescents, higher scores on these components of ERI generally relate to less mental health problems and higher self-esteem (Miller-Cotto & Byrnes, 2016; Rivas-Drake, Seaton et al., 2014).

The Ethnic Identity Scale was developed to assess ERI exploration, resolution, and affirmation (Umaña-Taylor et al., 2004), has been widely used in studies of adolescents and young adults from diverse ethnic-racial backgrounds (for review see Schwartz et al., 2014), and was recently condensed to a brief 9-item version (EIS-Brief; Douglass & Umaña-Taylor, 2015; see Supplementary Materials, Table S2). Exploratory and confirmatory factor analyses provided support for the theorized 3-factor structure (i.e., exploration, resolution, affirmation) in a diverse sample of university students and there were strong internal consistency estimates in a diverse sample of adolescents (α .84 - .89; Umaña-Taylor et al., 2004). Other studies have supported the EIS 3-factor structure and internal consistency of items in diverse samples of university students (α .76 - .91; Umaña-Taylor & Shin, 2007; Yoon, 2011) and adolescents (α .77 - .85; Douglass & Umaña-Taylor, 2017; Supple, Ghazarian, Frabutt, Plunkett, & Sands, 2006). Lower internal consistency has been reported for affirmation items among certain ethnic-racial groups in certain regions (Umaña-Taylor & Shin, 2007), suggesting the potential for group and regional differences in item functioning. Metric invariance (i.e., equivalence of factor loadings) was supported for the 3-factor EIS across European American, Asian American, Latino, and African American university students (Umaña-Taylor & Shin, 2007). Scalar invariance (i.e., equivalence of item intercepts) was supported for the 3-factor EIS-B across White, Latino, East and South Asian, Black, and Middle Eastern university students (Douglass & Umaña-Taylor, 2015).

Though most ERI research focuses on the adolescent years due to developmental salience of ERI formation (Umaña-Taylor, Quintana et al., 2014), to our knowledge, there are no published tests of factor structure or measurement equivalence of the EIS-B with adolescent samples.

The Multidimensional Inventory of Black Identity – Teen (Scottham et al., 2008) was developed based on Luhtanen and Crocker’s (1992) conceptualization of identity importance (i.e., *centrality*) and public esteem (i.e., *public regard*), which are social identity constructs relevant to multiple ethnic-racial groups. Though the measure was originally developed in a sample of Black American adolescents, the measure has since been modified for use with ethnographically diverse samples (e.g., Fuligni, Witkow, & Garcia, 2005; Johnson, Robinson Kurpius, Rayle, Arredondo, & Tovar-Gamero, 2005; Rivas-Drake, Hughes, & Way, 2009). Item wording has been adapted to be relevant to members of any ethnic-racial group (e.g., replacing “Black” with references to “my ethnicity” or “my ethnic group”; see Supplementary Materials, Table S3). CFAs have supported centrality and public regard as separate factors among Black adolescents (Scottham et al., 2008). Centrality and public regard items have demonstrated acceptable internal consistency in studies of Asian American, African American, Mexican American, and European American adolescents (α s .71 - .80 centrality; α s .77 - .80 public regard; Fuligni et al., 2005; Rivas-Drake et al., 2009). However, to our knowledge, no other CFAs confirm the latent factors of centrality and public regard, nor provide evidence for measurement invariance across ethnic-racial groups or geographic contexts. In the current study, MIBI-t private regard items were not included due to conceptual overlap with ethnic-racial affirmation (described above, measured using EIS-B), and MIBI-t ideology items were not included because they are not appropriate for use with non-Black populations (Scottham et al., 2008).

Theory suggests that adolescents' greater engagement in the developmental processes of identity exploration and resolution promote positive self-concept (Erikson, 1968; Umaña-Taylor, 2016b). Social identity theory also posits that positive self-concept stems from connection to and positive evaluations of one's social group membership (Tajfel & Turner, 1986). Guided by these theories, and consistent with prior empirical support (e.g., Johnson et al., 2005; Rivas-Drake, Seaton et al., 2014; Umaña-Taylor & Shin, 2007; Umaña-Taylor et al., 2004; Yoon, 2011), the current study evaluated the convergent validity of exploration, resolution, affirmation, centrality, and public regard scores by examining their correlations with self-esteem (i.e., global self-respect and evaluation of personal worth; Rosenberg, 1979).

Other Group Orientation

As adolescents develop beliefs and attitudes about their own ethnic-racial groups, they also begin to establish how open and accepting they are of people from other groups (Phinney, 1992; Phinney et al., 1997). *Other group orientation* (OGO) refers to adolescents' attitudes toward contact with individuals from other ethnic-racial groups (Phinney, 1992). In general, adolescents' OGO has received less research attention than ethnic-racial discrimination or other aspects of ERI development. Consistent with developmental identity theory (Erikson, 1968), studies have shown that adolescents with a more developed ERI tend to hold more positive outgroup attitudes (Phinney et al., 1997; Phinney, Jacoby, & Silva, 2007; Umaña-Taylor, Kornienko, Bayless, & Updegraff, 2018). Further, more positive OGO has been associated with more diverse friendships (Rivas-Drake, Saleem, Schaefer, Medina, & Jagers, 2019), social connection (Lee, 2003) and positive attitudes toward school (Guzmán, Santiago-Rivera, & Hasse, 2005). Despite well-documented obstacles to intergroup interaction, more positive

intergroup attitudes and contact can provide important routes to reducing ethnic-racial inequality via empathy and perspective taking (Tropp & Barlow, 2018).

OGO is assessed in a 6-item subscale of the Multidimensional Ethnic Identity Measure (MEIM; Phinney, 1992). Several studies of university students have conducted CFAs and tested measurement invariance of MEIM scores across ethnic-racial groups (e.g., Feitosa, Lacerenza, Joseph, & Salas, 2017; Yap et al., 2014; Yoon, 2011), but they have not included these OGO items in analyses. Indeed, most research using the MEIM has not reported results for OGO (for review see Schwartz et al., 2014), which may be due to earlier mixed results regarding the potential multidimensionality of the OGO construct. Studies using exploratory factor analyses have reported 1-factor and 2-factor solutions among ethno-racially diverse university students (Phinney, 1992; Worrell, 2000), and another study revealed three items that did not load cleanly on either of two factors in a sample of diverse but predominantly White adolescents (Ponterotto, Gretchen, Utsey, Stracuzzi, & Saya, 2003). One study using CFAs provided support for a 1-factor OGO model and equivalence of factor structure and loadings across ethnic-racial groups in a sample of African American, Asian American, Latino, and White university students, but notably collapsed data from three geographic regions without examining context equivalence (Avery, Tonidandel, Thomas, & Johnson, 2007). Despite this mixed evidence and no available CFA validation of OGO factor structure among adolescents, researchers have tended to treat the OGO construct as unidimensional. Internal consistency estimates for the six items together have varied within a relatively lower but generally acceptable range in ethno-racially diverse samples (α s .59-.78; Lee, 2003; Guzmán et al., 2005; Ponterotto et al., 2003; Umaña-Taylor et al., 2018). In the current study, only OGO items were included due to conceptual overlap between the other

14 MEIM items (see Feitosa et al., 2017; Yoon, 2011) and EIS-B exploration and resolution items (see Supplementary Materials, Table S4).

Developmental and ERI theory suggest that adolescents with a more mature understanding of their own identity (i.e., those who have explored and better understand what their ethnicity-race means to them) are better positioned to interact positively with the social world (Erikson, 1968; Phinney et al., 1997). Consistent with these theories, some evidence indicates that adolescents with higher ERI achievement tend to have more positive attitudes toward engaging with other ethnic-racial groups (e.g., Phinney et al., 1997, 2007). Thus, the current study evaluated convergent validity of OGO scores by examining their correlation with a measure of ERI achievement (i.e., combined exploration and resolution process).

Current Study

In the current study, we provided novel contributions by rigorously testing the equivalence of factor structures, factor loadings, and item intercepts of four measures (ADDI, EIS-B, MIBI-t centrality and public regard, MEIM OGO) across ethnic-racial groups (Native American, Asian American, Black American, Latinx American, and White American)² and within ethnic-racial groups across two geographic regions (southwestern and midwestern U.S.). Further, we examined the convergent validity of scores on each measure by testing hypothesized associations with related constructs.

Hypothesis 1: We expected that factor structures and loadings would be equivalent across ethnic-racial groups (i.e., metric invariance), but did not expect all item intercepts to be

² Based on recommendations during the review process, the terms used to describe ethnic-racial groups in the current study are Asian American, Black American, Latinx American, Native American, and White American. There is considerable variability in the ethnic-racial labels youth use to self-identify and the terms used here reflect pan-ethnic-racial categories in the context of the U.S. The exception to the use of these terms is when authors or original works being reviewed used different terminology; in those cases, we retained the authors' original labels.

equivalent across White and ethnic-racial minority adolescents (i.e., partial scalar invariance). Developmental and social identity theories (Erikson, 1968; Tajfel & Turner, 1986) suggest that understanding social group membership is a universal process, and prior invariance tests of related identity measures with adult samples suggest metric invariance (e.g., Feitosa et al., 2017). However, extant work suggests that the salience of ethnic-racial discrimination experiences and identity is different for majority and minority group members (Pascoe & Smart Richman, 2009; Phinney, 1993; Yip et al., 2019), and strict level scalar invariance has rarely been demonstrated for similar ethnic-racial-related psychological constructs (Knight et al., 2009; Schwartz et al., 2014).

Hypothesis 2: We also expected that factor structures and loadings would be equivalent for adolescents from the same ethnic-racial group across U.S. regions (i.e., metric invariance), but did not expect all item intercepts to be equivalent across these contexts (i.e., partial scalar invariance). Geographic region is an additional contextual consideration that informs majority/minority group status (Umaña-Taylor & Shin, 2007; Xu et al., 2015), and therefore can inform the salience of discrimination experiences and how individuals conceive of their social identities in different contexts (Leath et al., in press; Umaña-Taylor, 2004, Xu et al., 2015).

Hypothesis 3: Based on prior theoretical and empirical work, and following confirmation of metric invariance, we expected that scores for peer-based, school-based, and institutional ethnic-racial discrimination would each be positively associated with depressive symptoms (Benner et al., 2018; Pascoe & Smart Richman, 2009). We also expected that scores for ERI exploration, resolution, affirmation, centrality, and public regard would each be positively associated with self-esteem (Rivas-Drake, Seaton et al., 2014; Umaña-Taylor, 2016b). Based on research using the MEIM OGO items with ethno-racially diverse groups (Lee, 2003; Phinney et

al., 1997), we hypothesized that OGO scores would be positively related to ERI achievement. Based on the consistency of prior findings across diverse samples, these relations were not expected to differ across ethnic-racial groups or regional contexts.

Method

Participants and Procedure

Data for the current study come from a larger project focused on the role of adolescents' peer networks in ERI development. The study sample comprised 9th through 12th grade students in two high schools located in a large metropolitan area of the southwestern U.S. and a mid-sized metropolitan area of the midwestern U.S., respectively.

In the Southwest state where data were collected, the largest ethnic-racial groups were non-Latino White American (54.4%), Latinx American (31.6%), American Indian or Native American (5.3%), Black or African American (5.1%), and Asian American (3.7%; U.S. Census, 2010). The Southwest study sample included 2,136 adolescents (52.4% female) who self-identified as American Indian or Native American (3.8%; $n = 80$), Asian American ($n = 67$) or Pacific Islander ($n = 18$; combined for analyses, 4.2%, $n = 85$), Black or African American (26.6%; $n = 569$), Latinx or Hispanic American (25.6%; $n = 547$), or White American (36.3%; $n = 775$). Due to limited sample size, participants who identified as Multiracial (2.1%; $n = 45$), Arab, Middle Eastern, North African (AMENA; 0.5%; $n = 11$), or Other (0.3%; $n = 7$) were omitted from analyses. In terms of grade level, 28.8% of participants were in the 9th grade, 25.7% 10th grade, 23.2% 11th grade, and 21.5% 12th grade. A majority of participants were born in the U.S. ($n = 2,011$; 94.1%).

In the Midwest state where data were collected, the largest ethnic-racial groups were non-Latino White (74.9%), Black or African American (14.1%), Latinx American (5.2%), and Asian

American (3.4%; U.S. Census, 2010). The Midwest sample included 1,055 adolescents (52.6% female) who self-identified as Asian American ($n = 280$) or Pacific Islander ($n = 2$; combined for analyses, 26.7%; $n = 282$), Black or African American (18.8%; $n = 198$), Latinx or Hispanic American (5.4%; $n = 57$), or White American (43.9%; $n = 463$). Participants who identified as American Indian or Native American (0.8%; $n = 8$), Multiracial (2.6%; $n = 27$), AMENA (1.4%; $n = 15$), or Other (0.3%; $n = 3$) were omitted from analyses. In terms of grade level, 23.2% of participants were in the 9th grade, 35.6% 10th grade, 24.4% 11th grade, and 16.5% 12th grade. A majority of participants were born in the U.S. ($n = 872$; 82.7%).

The research team at each site distributed paper-and-pencil surveys to teachers, and after providing assent, students completed the 45-minute survey during the school day. The measures were presented in the survey in the following order: ERI exploration, resolution, and affirmation; ethnic-racial centrality and public regard; ethnic-racial discrimination; other group orientation; depressive symptoms; and self-esteem. See Supplementary Materials (Tables S1-S3) for all items and descriptive statistics. The order of the measures and method of administration were identical at both sites. The university and school district institutional review boards at each site approved the study.

Measures

Ethnic-racial discrimination. The Adolescent Discrimination Distress Index (ADDI; Fisher et al., 2000) was originally a 15-item measure using dichotomous yes/no response options for participants to report instances of discrimination that have ever occurred to them. A modified 11-item ADDI was used in the current study (see Supplementary Materials, Table S1), reflecting updates that researchers have adopted, including extending response options to a 5-point relative frequency scale to assess how often discrimination has occurred from *never* (1) to *a whole lot*

(5), and by including an additional item (“Did people act suspicious of you because of your race/ethnicity?”; Benner & Graham, 2011; Douglass & Umaña-Taylor, 2017). Consistent with prior research in ethno-racially diverse samples (Douglass & Umaña-Taylor, 2017), one item (“Did other kids assume your English was poor because of your race/ethnicity?”) was not included in analyses. Regarding psychometric properties, prior research with diverse samples has provided evidence for the theoretically supported 3-factor structure, reliability, and validity via associations of ADDI scores in expected directions with academic and psychological maladjustment (Benner & Graham, 2011, 2013; Douglass & Umaña-Taylor, 2017; Fisher et al., 2000; Grossman & Liang, 2008). In the present study, internal consistency was acceptable in the Southwest (peer $\alpha = .75$; school $\alpha = .68$; institutional $\alpha = .83$) and Midwest (peer $\alpha = .73$; school $\alpha = .71$; institutional $\alpha = .79$).

ERI exploration, resolution, and affirmation. The Ethnic-Identity Scale – Brief (EIS-B; Douglass, & Umaña-Taylor, 2015) includes three subscales assessing the degree to which adolescents have sought information about their ethnic group (3 items; exploration), the sense of clarity they have regarding their ethnic identity (3 items; resolution), and how positively they feel about their ethnic group (3 items; affirmation). Items were rated on a 4-point Likert scale from *does not describe me at all* (1) to *describes me very well* (4). Regarding psychometric properties, EIS-B scores are highly predictive of scores on the original EIS, CFAs have confirmed the theoretically supported 3-factor structure, and EIS-B scores have demonstrated acceptable reliability and convergent validity in ethno-racially diverse samples of university students (Douglass & Umaña-Taylor, 2015) and adolescents (Sanchez, Whittaker, Hamilton, & Arango, 2017). Internal consistency of the items was acceptable in the Southwest (exploration $\alpha = .84$; resolution $\alpha = .87$; affirmation $\alpha = .79$) and Midwest (exploration $\alpha = .86$; resolution $\alpha =$

.88; affirmation $\alpha = .75$). For the purposes of convergent validity analyses (i.e., correlation with other group orientation), and consistent with prior work (Umaña-Taylor, O'Donnell et al., 2014), ERI achievement was assessed using the mean of exploration and resolution items (Southwest $\alpha = .85$; Midwest $\alpha = .87$).

Ethnic-racial centrality and public regard. A modified version of the Multidimensional Inventory of Black Identity-Teen (MIBI-t; Scottham et al., 2008) was used to assess the extent to which adolescents agreed that their ethnic identity was important for their self-concept (3 items; centrality) and that others viewed their ethnic group positively (3 items; public regard). Items were rated on a 5-point Likert scale from *strongly disagree* (1) to *strongly agree* (5). Regarding psychometric properties, prior research with diverse samples has provided evidence for the distinct factors of centrality and public regard, reliability, and validity via associations of MIBI-t scores in expected directions with self-esteem, academic adjustment, and parent cultural socialization (Fuligni et al., 2005; Johnson et al., 2005; Rivas-Drake et al., 2009). In the present study, internal consistency of the items was acceptable in the Southwest (centrality $\alpha = .67$; public regard $\alpha = .74$) and Midwest (centrality $\alpha = .67$; public regard $\alpha = .73$).

Other group orientation. The 6-item OGO subscale of the MEIM (Phinney, 1992) assessed the degree to which adolescents felt positively about and interacted with ethnic groups other than their own (i.e., out-groups). Items were rated on a 4-point Likert scale from *strongly disagree* (1) to *strongly agree* (4). To provide consistency with prior research (e.g., Phinney et al., 1997, 2007), we conducted measurement invariance analyses with a 1-factor OGO model, though the initial model fit was poor (Supplementary Materials, Table S5-S6). Following prior suggestions for model revisions (Ponterotto et al., 2003) and limited prior research using OGO items with adolescents, a post-hoc 2-factor model fit the Southwest and Midwest data well and

did not require correlating the residual errors of a subset of items (Supplementary Materials, Figure S4). Regarding psychometric properties, prior research with diverse samples has provided evidence for reliability and validity via associations of OGO scores in expected directions with ERI achievement, more diverse friendships, and positive school attitudes (Guzmán et al., 2005; Phinney et al., 1997; Rivas-Drake et al., 2019). In the present study, internal consistency of the items was acceptable in the Southwest (approach subscale $\alpha = .74$; avoidance items $r = .48, p < .001$) and Midwest (approach subscale $\alpha = .74$; avoidance items $r = .52, p < .001$).

Depressive symptoms. The 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to assess depressive symptoms. Items (e.g., “You felt lonely”) were rated on a 4-point Likert scale ranging from *rarely or none of the time [less than 1 day]* (0) to *mostly or almost all the time [5–7 days]* (3), with higher values indicating more depressive symptoms. Meta-analytic research has demonstrated evidence for adequate psychometric properties and measurement invariance of the 20 items across ethno-racially diverse groups of U.S. adolescents (e.g., Kim, DeCoster, Huang, & Chiriboga, 2011). Internal consistency of the items was acceptable in the Southwest ($\alpha = .92$) and Midwest ($\alpha = .92$).

Self-esteem. Self-esteem was measured using the 10-item Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979). Items (e.g., “I feel that I have a number of good qualities”) were rated on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). Regarding psychometric properties, prior research with diverse samples of adolescents has provided evidence of invariance across ethnic-racial groups and reliability and validity of RSE scores (Phinney et al., 1997; Rivas-Drake, 2011; Umaña-Taylor et al., 2004; Supple, Su, Plunkett, Peterson, & Bush, 2013). Internal consistency of the items was acceptable in the Southwest ($\alpha = .91$) and Midwest ($\alpha = .92$).

Analytic Strategy

Across both samples, 3.9% of participants were missing ADDI item responses, 3.0% were missing EIS-B items, 3.5% were missing MIBI-t items, and 5.8% were missing OGO items. There was less than 1.5% missing data at the item level across all of the measures. First, confirmatory factor analysis (CFA) models were used to assess fit of the *a priori* theorized factor structures for focal measures, including 3-factor ADDI, 3-factor EIS-B, 2-factor MIBI-t (centrality and public regard), and 1-factor OGO with data pooled across ethnic-racial (E-R) groups separately for the Southwest and Midwest samples. Given the p value associated with χ^2 test of model fit is sensitive to sample size (Kline, 2010), we based model fit evaluations on consideration of multiple indices, including comparative fit index (CFI), root mean square error of approximation (RMSEA, and 90% CI), and standardized root mean square residual (SRMR; Hu & Bentler, 1999). We followed guidelines that $CFI \geq .95$ and $RMSEA \leq .05$ represent good model fit, $CFI \geq .90$ and $RMSEA \leq .08$ represent adequate fit, and $SRMR > .08$ indicates relatively poor fit (Kline, 2010).

Next, we fit a series of nested multi-group CFA models using ethnic-racial (E-R) group as the grouping variable to test invariance of scores on each measure across E-R groups separately with the Southwest and Midwest data. The ratios of unbalanced group sizes were within suggested ranges for un-biased multi-group invariance tests (Yoon & Lai, 2018). Exceptions included ADDI models for Native American and Asian American adolescents in the Southwest and Latinx American adolescents in the Midwest, who were omitted from invariance testing due to smaller group sizes than the number of estimated parameters. We tested (a) configural invariance (i.e., equivalence of factor structures) by assessing the fit of multi-group models based on the consideration of multiple fit indices; (b) metric invariance (i.e., equivalence

of factor loadings) by constraining factor loadings to be equal across E-R groups; and (c) scalar invariance (i.e., equivalence of loadings and item intercepts) by constraining intercepts to be equal. Finally, we repeated these steps using geographic region as the grouping variable to test invariance of each measure within E-R group across regions (e.g., Asian Americans in the Southwest and Midwest). Only Asian American, Black American, and White American adolescents had sufficient group sizes for these comparisons across regions. Further, the sample size for Asian Americans in the Southwest site was not sufficient to warrant comparison for the 10-item ADDI across sites (i.e., number of model parameters exceeded group size).

Rescaled likelihood ratio χ^2 difference tests have received critique for inflated Type I error in large samples (Cheung & Rensvold, 2002; Little, 2013). Thus, following recommendations (Cheung & Rensvold, 2002; Dimitrov, 2010; Putnick & Bornstein, 2016), we considered invariance to hold if each sequentially stricter constraint (e.g., comparing metric invariance to configural invariance) resulted in a change in CFI $> -.01$. Change in CFI was calculated by subtracting the CFI of the least constrained model (e.g., configural invariance) from the CFI of the more constrained model (e.g., metric invariance). When invariance was not supported in these nested model comparisons (i.e., change in CFI $\leq -.01$), we followed the backward sequential approach by systematically freeing parameter constraints one at a time based on modification indices $\geq 6.64^3$ until the change in CFI was acceptable (Jung & Yoon, 2016; Yoon & Kim, 2014). This examination of partial invariance allows for the identification of specific sources of invariance at the item level and provides practical suggestions about differential item functioning for specific groups. Models were fit in *Mplus* version 8.1 (Muthén & Muthén, 1998-2017) using maximum likelihood estimation with robust standard errors.

³ $6.64 = \chi^2$ for 1 *df* at $p = .01$.

Convergent validity was evaluated using Pearson's r bivariate correlations between observed scores of theoretically related constructs: peer, school, and institutional E-R discrimination with depressive symptoms; ERI exploration, resolution, affirmation, centrality, and public regard with self-esteem; and other group orientation with ERI achievement (i.e., composite of exploration and resolution). Correlations were examined separately in Southwest and Midwest samples and by E-R group.

Results

Results of CFA models indicated that model fit was acceptable for 3-factor ADDI, 3-factor EIS-B, 2-factor MIBI-t, and 2-factor OGO models for data pooled across E-R groups in the Southwest (Table 1) and Midwest (Table 2) samples, as well as data pooled across regions for Asian American (Table 4), Black American (Table 5), and White American (Table 6) adolescents (see Tables for fit indices). As described in the measures section, the *a priori* 1-factor OGO model did not fit the data well, but a post-hoc 2-factor OGO model was supported, which was also consistent with prior exploratory factor analyses (Phinney, 1992; Ponterotto et al., 2003). See Supplementary Materials (Table S5, Figures S1-S4) for post-hoc bi-factor modeling requested in the review process that provides additional empirical support for the multidimensionality of all measures.

Measurement Invariance Across Ethnic-Racial Groups by Geographic Region

Southwest sample. Multi-group CFA models using E-R as the grouping variable fit adequately for 3-factor ADDI, 3-factor EIS-B, 2-factor MIBI-t, and 2-factor OGO according to consideration of multiple fit indices (Table 1). The adequate or better fit of these models provided support for configural invariance (i.e., equivalence of factor structures across E-R groups; see Supplementary Materials, Figures S1-S4, for factor structures and loadings). Based

on the invariance criterion for nested models (change in CFIs $> -.01$), metric invariance was supported for ADDI, EIS-B, MIBI-t, and OGO when factor loadings were constrained to be equal across E-R groups (Table 1). Change in CFIs $\leq -.01$ indicated there was not support for scalar invariance on any of these measures when item intercepts were constrained to be equal across E-R groups (Table 1). Freeing item-intercept constraints using the backward sequential approach according to significant modification indices ($p < .01$) revealed some invariant and some non-invariant item intercepts (i.e., partial scalar invariance). After freeing these item-intercept constraints, model fit was equivalent to corresponding metric invariance models (i.e., change in CFIs $> -.01$; Table 1).

Midwest sample. Configural invariance and metric invariance were also supported for scores on ADDI, EIS-B, MIBI-t, and OGO in the Midwest data (Table 2; see Supplementary Materials, Table S5, Figures S1-S4, for factor structures and loadings). Change in CFIs $\leq -.01$ indicated there was not support for scalar invariance on any of these measures. Partial scalar invariance was supported after freeing item-intercept constraints using the backward sequential approach (Table 2).

Partial scalar invariance. Table 3 presents item intercepts from partial scalar invariance models (i.e., mix of equivalent and non-equivalent items) across E-R groups for the Southwest and Midwest samples, respectively. In order to achieve partial scalar invariance, ADDI, EIS-B, MIBI-t, and OGO avoidance item intercepts were freely estimated for White American adolescents. Most item intercepts could be constrained to be equal across other E-R groups. Exceptions that were freely estimated to achieve partial scalar invariance included ADDI institutional discrimination items for Asian, Black, and Latinx American adolescents, one EIS-B exploration item for Black American adolescents, MIBI-t public regard items for Asian and

Black American adolescents, MIBI-t centrality items for Black American adolescents in the Southwest, and several OGO items for different E-R groups in different regions (see Table 3).

Measurement Invariance Across Southwest and Midwest Samples by E-R Group

Multi-group CFA models using geographic region as the grouping variable supported configural and metric invariance for scores on ADDI, EIS-B, MIBI-t, and OGO for Asian American (Table 4), Black American (Table 5), and White American (Table 6) adolescents. For Asian American adolescents, scalar invariance across regions was supported for scores on EIS-B and OGO, but not MIBI-t (Table 4). For Black American adolescents, scalar invariance was supported for scores on EIS-B and MIBI-t, but not ADDI or OGO (Table 5). For White American adolescents, scalar invariance was supported for OGO scores, but not ADDI, EIS-B, or MIBI-t scores (Table 6).

Partial scalar invariance. Table 7 presents item intercepts from partial scalar invariance models across regions for Asian, Black, and White American adolescents, respectively. For Asian American adolescents, all MIBI-t items and one OGO avoidance item were freely estimated across regions. For Black American adolescents, one ADDI peer discrimination item and one OGO approach item were freely estimated across regions. For White American adolescents, all ADDI peer discrimination items, two EIS-B items, and two MIBI-t public regard items were freely estimated across regions (see Table 7).

Convergent Validity

Bivariate correlations between subscale scores of focal measures and measures of theoretically related constructs are presented in Table 8. In support of convergent validity for ADDI scores, a total of 24 possible correlations were examined across E-R groups and sites for the three discrimination factors (peer, school, institutional) and an overall score (i.e., average of

10 items); 23 of the 24 correlations between E-R discrimination scores and depressive symptoms were positive and significant – providing strong support for the convergent validity of ADDI scores across regions and E-R groups.

Also in support of convergent validity for ERI resolution scores, nine out of nine correlations with self-esteem were positive and significant. Eight out of nine correlations with self-esteem were significant for affirmation, centrality, and public regard scores, respectively. Together, these findings provided strong support for the construct validity of scores on these four subscales across regions and E-R groups. In contrast, findings for convergent validity of ERI exploration scores were mixed. In the Southwest, ERI exploration scores were significantly and positively correlated with self-esteem only for White American adolescents, but not for Native, Asian, Black, or Latinx American adolescents. In the Midwest, ERI exploration scores were positively correlated with self-esteem among Asian, Black, and White American adolescents, but not among Latinx American adolescents.

Finally, there was strong support for convergent validity of OGO approach scores (i.e., average of 4 positively phrased items) and overall OGO scores (i.e., average of 6 items), respectively, based on positive and significant correlations with ERI achievement in seven of the nine correlations examined across regions and E-R groups. In contrast, exploratory analyses indicated that none of nine correlations between OGO avoidance scores and ERI achievement were significant across regions and E-R groups.

Discussion

As the U.S. continues to diversify, assessments that adequately capture adolescents' perceptions of unfair treatment based on their ethnic-racial background and the progression and content of their ERI development are essential to identify sources of ethnic-racial-related risk

and resilience for their health and well-being. Research has increasingly examined ethnic-racial discrimination and ERI in studies of U.S. adolescents (Benner et al., 2018; Schwartz et al., 2014), but as of yet a critical step in the research process has been overlooked – testing whether it is possible to compare available measures of these constructs across adolescents (a) of different ethnic-racial groups, and (b) of the same ethnic-racial group living in different geographic regions with differing levels of group representation and unique sociocultural histories. Based on equivalent factor structures, results showed that an adapted version of the ADDI, EIS-B, centrality and public regard items from MIBI-t, and OGO items from MEIM can be used in studies of Asian, Black, Latinx, Native, and White American adolescents. This was supported with two sources of data from the southwestern and midwestern U.S., respectively. Despite the support for configural and metric equivalence, lack of evidence for scalar equivalence cautions researchers to avoid certain mean-level group comparisons using these measures. Further, support for convergent validity indicated that adolescents who reported more frequent ethnic-racial discrimination (from peers, adults in school, and other adults in society) also had higher levels of depressive symptoms; adolescents with higher ERI resolution, affirmation, centrality, and public regard also had higher self-esteem, and adolescents with more positive attitudes toward interacting with members of other ethnic-racial groups also had higher ERI achievement. These associations were generally consistent across ethnic-racial groups and regions.

Adolescent Discrimination Distress Index

This was one of the first studies to provide support via CFA for a 3-factor structure of an adapted 10-item version of the ADDI to assess the related but unique sources of ethnic-racial discrimination that adolescents can face from peers, adults in school, and other adults in society (i.e., institutional discrimination). Three factors support separate subscale scores to assess how

often ethnic-racial discrimination occurs from varying sources among youth of the same ethnic-racial group and how discrimination relates to youth outcomes across diverse groups of adolescents. Additionally, these within- and between-group questions may be examined further in studies of youth living in different regional contexts of the U.S. Southwest and Midwest. Consistent with a recent meta-analysis (Benner et al., 2018), results from the current study indicated that adolescents who experience more frequent ethnic-racial discrimination also had higher levels of depressive symptoms, in support of convergent validity of peer-based, school-based, and institutional discrimination items. Future research should continue to explore *for whom* and *under what conditions* discrimination is most harmful to youth.

Consistent with *Hypothesis 1*, various ADDI item responses were not equivalent at the intercept level, calling into question whether mean-level group comparisons are appropriate. For example, results indicated endorsement of items assessing unfair treatment from adults in society based on ethnicity-race was systematically higher for Black, Latinx, and Asian American adolescents in sequential fashion, whereas endorsement of almost all discrimination items was systematically lower for White American adolescents (see Table 3). Further, endorsement of peer discrimination items was not equivalent for Black or White American adolescents across geographic regions (see Table 7). This lack of equivalence at the intercept level indicates that responses to questions about how often unfair treatment occurs on the basis of ethnicity-race (e.g., “once or twice,” “a few times,” “a lot”) do not carry the same meaning or are not interpreted in the same way for youth from different ethnic-racial groups or for youth within the same ethnic-racial group living in the U.S. Southwest and Midwest. This finding is consistent with the differential salience and impact of discrimination experiences for majority and minority individuals (Benner et al., 2018). Based on the equivalence of some item intercepts, other mean-

level group comparisons may be supported, such as whether frequency of peer-based discrimination differs across groups of ethnic-racial minority youth or whether frequency of school-based discrimination differs across contexts for Black American youth, provided researchers have a strong theoretical rationale for making such comparisons (Knight et al., 2009).

Ethnic Identity Scale - Brief

Consistent with previous studies of university students (Douglass & Umaña-Taylor, 2015; Umaña-Taylor & Shin, 2007), the present study extended support for the equivalence of the EIS-B 3-factor structure for adolescents across ethnic-racial groups and within groups across geographic regions. Specifically, these three factors support subscale scores to assess ERI exploration, resolution, and affirmation in within-ethnic-racial group studies and test whether these ERI components differentially relate to outcomes based on ethnic-racial group membership or based on context for adolescents of the same ethnic-racial group. Consistent with prior research (e.g., Rivas-Drake, Seaton et al., 2014; Rivas-Drake, Syed et al., 2014), and in support of convergent validity, adolescents who come to understand and feel more positively about their ethnic-racial group also reported higher self-esteem scores. Future research may test, for example, whether academic or other psychosocial benefits related to adolescents' ERI development differ by ethnic-racial group or context in order to better understand *for whom* and *under what conditions* ERI is most strongly related to youth outcomes.

Unlike a previous study of ethno-racially diverse university students (Douglass & Umaña-Taylor, 2015), but consistent with *Hypothesis 1*, endorsement of ERI exploration, resolution, and affirmation items was systematically lower for White American adolescents relative to adolescents of other ethnic-racial groups; this finding was consistent in the Southwest and Midwest data (see Table 3). This lack of ability to compare mean-level ERI differences

between majority and minority youth is generally consistent with ERI theoretical frameworks, which suggest unique aspects of ERI development for majority and minority groups (Phinney, 1993). Further, among White American adolescents, endorsement of ERI exploration and resolution items was not equivalent across sites, suggesting that the process of White ERI development requires further investigation. Aside from these caveats, most other mean-level group comparisons are supported for Asian, Black, Latinx, and Native American youth. Going forward, future studies may focus on examining whether ERI exploration levels differ across groups of ethnic-racial minority youth, or whether ERI affirmation levels differ for youth from the same ethnic-racial group in different geographic regions, following a social identity framework for testing differences in ERI salience (Tajfel & Turner, 1986).

Multidimensional Inventory of Black Identity – Teen

To our knowledge, the present study provided the first support for the equivalence of centrality and public regard factors across diverse ethnic-racial groups and within groups across regions. Measurement invariance testing is still needed for other MIBI-t items that were not included in the larger study due to conceptual overlap with other survey measures (e.g., private regard). Evidence for configural and metric invariance across groups and geographic regions supports researchers' efforts to assess centrality and public regard in within-group studies and to examine associations between adolescents' ascribed importance of ethnicity-race to their self-concept, their perceptions of how others view their ethnic-racial group, and other related constructs in diverse samples. In support of convergent validity, higher scores on centrality and public regard items, respectively, were associated with higher self-esteem scores. Future research may consider whether centrality or public regard relate to other constructs of developmental

interest (e.g., academic motivation) in the same way for ethnic-racial minority and majority youth, or for youth of the same group in different geographic regions.

Consistent with *Hypothesis 1*, MIBI-t item intercept levels were not equivalent between majority and minority groups. For example, endorsement of ethnic-racial centrality items was systematically lower for White American adolescents and systematically higher for Black American adolescents. Further, endorsement of ethnic-racial public regard items was systematically higher for Asian and White American adolescents and systematically lower for Black American adolescents (see Table 3). Similar to findings for EIS-B, this lack of equivalence is generally consistent with ERI theory (Phinney, 1993) and the sociohistorical context of ethnicity-race within systems of power in the U.S. (Devos & Banaji, 2005). Given the unique race-related experiences of Black American youth (Scottham et al., 2008) and lack of consensus regarding the meaning of ERI for White American youth, it is not surprising that responses to questions about how central one's ethnicity-race is or how other groups perceive one's ethnic-racial group may not carry the same meaning or be interpreted in the same way for these groups. Further, among Asian American adolescents, endorsement of centrality and public regard items was not equivalent across Southwest and Midwest regions (see Table 7). More contextually- or culturally-specific measures may be needed to also capture variation in experiences of model-minority and perpetual foreigner stereotypes that uniquely influence the well-being of diverse groups of Asian American youth in distinct settings (e.g., Ng, Lee, & Pak, 2007). Aside from these sources of non-equivalence, partial scalar invariance models provided support for other theory-driven group comparisons that can answer important questions about race-related experiences among U.S. minority youth, such as whether Black American adolescents feel that others positively view their group to the same extent in different geographic regions.

Other Group Orientation

Our study was among the first to provide support for OGO items comprising two inversely related dimensions with equivalent factor loadings across ethnic-racial groups and within groups across regions. These two factors, replicated in two data sources, are conceptually aligned with prior research on approach and avoidance orientations towards out-group members (e.g., Huff, Saleem, & Rivas-Drake, in press). Configural and metric invariance of OGO items supports their use in single ethnic-racial group studies and to test whether OGO relates to other theoretically related constructs differently based on ethnic-racial group membership or based on region within the same group. This opens up intriguing options for further theory building and empirical research that takes into account whether adolescents are positively inclined to engage with others who are different from them or, conversely, whether they are more inclined to avoid engaging with those who are different – ideas that align with ingroup/outgroup models of prejudice and race-related attitudes (e.g., Brewer, 1999). In support of convergent validity, and prior research with the six OGO items (Phinney et al., 1997, 2007), OGO approach scores (i.e., holding positive attitudes toward engaging with other groups) were positively associated with ERI achievement. However, OGO avoidance scores (i.e., holding negative attitudes toward engaging with other groups) were not related to ERI achievement, suggesting this may be a conceptually distinct component of other group orientation that is relatively orthogonal to adolescents' ERI development. Further research is needed, particularly with these novel dimensions, to better understand measurement of OGO in ethno-racially diverse samples.

Several OGO items were not equivalent at the intercept level across different ethnic-racial groups and within groups across regions. Given the relative scarcity of OGO research with adolescents, researchers should continue examining psychometric properties of the OGO items in

their own data, including how responses may function differently across groups. For example, endorsement of “I don’t try to become friends with people from other ethnic groups” was systematically lower for Asian and White American adolescents, whereas endorsement of “I am involved in activities with people from other ethnic groups” was systematically lower for Native American and Latinx American adolescents (see Table 3). Further, within groups, at least one OGO item was not equivalent for Asian American and Black American adolescents across geographic regions (see Table 7). How youth from different ethnic-racial groups or those living in different regions interpret the meaning of these scale items warrants further consideration and, possibly, the development of new contextually-sensitive measures to capture this phenomenon (e.g., references to groups for which there is opportunity for daily contact). Most importantly, based on this evidence, mean-level group difference tests are not supported with this measure.

Limitations

The study was limited by the exclusion of Arab, Middle Eastern, North African, and multiracial youth, whose small sample sizes precluded inclusion in analyses. Additionally, Native American, Latinx American, and Asian American participants were excluded from certain comparisons, based on relatively smaller group sizes. Though reflecting the ethnic-racial distribution of school settings from which they were drawn and within recommended guidelines for multi-group models (Yoon & Lai, 2018), groups included in analyses were unbalanced in size. These limitations highlight the importance of continued collaboration across research teams to recruit and include larger samples of underrepresented ethnic-racial minority youth. Further, sample size issues also precluded considering the substantial diversity in adolescents’ cultural backgrounds *within* each pan-ethnic-racial group (e.g., Asian and Pacific Islander American youth), which limited measurement comparisons to broader pan-ethnic groups; future work with

larger samples is needed to recognize diversity and examine potential variability within groups. Researchers should also consider other salient social identities (e.g., gender) and their intersections in measurement of ethnic-racial-related constructs to build a more thorough understanding of adolescents' lived experiences regarding marginalization. The OGO approach and avoidance factors, though replicated in two large and diverse samples in this study, warrant continued psychometric evaluation. Item response theory analyses or network psychometric modeling may aid in the consideration of inter-item relations and wording effects for this and other measures. Finally, we were unable to test contextual variation for adolescents living in geographic regions other than the southwestern and midwestern U.S.

Conclusion

Identifying measures of ethnic-racial discrimination and ethnic-racial identity (ERI) that can be used equivalently with adolescents of diverse ethnic-racial groups improves researchers' ability to conduct survey studies with representative samples of youth, ultimately leading to better science and a more comprehensive understanding of these constructs. The present study identified that some but not all items in commonly used measures may be considered equivalent across ethnic-racial groups and geographic regions. Additional research will help elucidate ethnic-racial risk and resilience processes critical for the health and well-being of U.S. youth.

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Table 1

Multi-group CFA results by ethnicity-race for Southwest sample of Native American (n = 80),

Asian American (n = 85), Black American (n = 569), Latinx American (n = 547), and White American (n = 775)

adolescents

ADDI ^a (10 items; n = 1,826)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	206.404** (32)	.055 [.048, .062]	.041	.943	--	--
Configural invariance	324.673** (96)	.063 [.055, .070]	.052	.921	--	Pass
Metric invariance	319.376** (110)	.056 [.049, .063]	.057	.928	+.007	Pass
Scalar invariance	648.365** (130)	.081 [.075, .087]	.163	.822	-.106	Fail
Partial scalar invariance	351.756** (118)	.057 [.050, .064]	.064	.920	-.008	Pass
EIS-B (9 items; n = 2,016)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	74.727** (24)	.032 [.024, .041]	.021	.989	--	--
Configural invariance	229.243** (120)	.048 [.038, .057]	.034	.977	--	Pass
Metric invariance	242.772** (144)	.041 [.032, .050]	.046	.979	+.002	Pass
Scalar invariance	721.561** (180)	.086 [.080, .093]	.149	.884	-.095	Fail
Partial scalar invariance	305.003** (170)	.044 [.036, .052]	.056	.971	-.008	Pass
MIBI-t (6 items; n = 1,994)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	100.742** (8)	.076 [.063, .090]	.045	.955	--	--
Configural invariance	84.673** (40)	.053 [.037, .069]	.029	.979	--	Pass
Metric invariance	116.551** (56)	.052 [.039, .065]	.051	.971	-.008	Pass
Scalar invariance	872.372** (80)	.158 [.148, .167]	.170	.626	-.345	Fail
Partial scalar invariance	132.841** (65)	.051 [.039, .064]	.054	.968	-.003	Pass
OGO (6 items; n = 1,946)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	7.625 (8)	.000 [.000, .026]	.009	1.000	--	--
Configural invariance	53.749 (40)	.030 [.000, .049]	.022	.992	--	Pass
Metric invariance	81.896* (56)	.034 [.016, .050]	.056	.984	-.008	Pass
Scalar invariance	169.367** (80)	.054 [.042, .065]	.078	.946	-.038	Fail
Partial scalar invariance	109.689** (73)	.036 [.021, .049]	.063	.978	-.006	Pass

Note. N for pooled Southwest sample = 2,056. ADDI = Adolescent Discrimination Distress Index; EIS-B = Ethnic Identity Scale – Brief; MIBI-t = Multidimensional Inventory of Black Identity – Teen (public regard and centrality subscales); OGO = Other Group Orientation; χ^2 = chi-square test of model fit; df = degrees of freedom for chi-square test of model fit; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = square root mean square residual; CFI = confirmatory fit index; Δ CFI = change in CFI from comparison model (Metric compared to Configural; Scalar compared to Metric; Partial Scalar compared to Metric); Pass = equivalent fit to comparison model (Δ CFI > -.010); Fail = non-equivalent fit to comparison model (Δ CFI $\leq$ -.010).

^aAnalytic models included Black, Latinx, and White American adolescents.

* $p < .05$. ** $p < .01$.

Table 2

Multi-group CFA results by ethnicity-race for Midwest sample of Asian American (n = 282), Black American (n = 198), Latinx American (n = 57), and White American (n = 463) adolescents

ADDI ^a (10 items; n = 928)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	92.638** (32)	.045 [.035, .056]	.036	.950	--	--
Configural invariance	193.306** (96)	.057 [.046, .069]	.055	.907	--	Pass
Metric invariance	193.210** (110)	.049 [.038, .061]	.082	.921	+.014	Pass
Scalar invariance	313.738** (130)	.068 [.058, .077]	.166	.817	-.104	Fail
Partial scalar invariance	205.101** (116)	.050 [.038, .061]	.087	.915	-.006	Pass
EIS-B (9 items; n = 990)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	61.115** (24)	.040 [.027, .052]	.026	.986	--	--
Configural invariance	197.989** (96)	.066 [.053, .078]	.044	.961	--	Pass
Metric invariance	229.358** (114)	.064 [.052, .076]	.064	.956	-.005	Pass
Scalar invariance	458.056** (141)	.095 [.086, .105]	.151	.879	-.077	Fail
Partial scalar invariance	269.127** (132)	.065 [.054, .076]	.074	.948	-.008	Pass
MIBI-t (6 items; n = 985)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	74.333** (8)	.092 [.073, .111]	.054	.940	--	--
Configural invariance	83.581** (32)	.081 [.060, .102]	.043	.954	--	Pass
Metric invariance	99.252** (44)	.071 [.053, .090]	.062	.951	-.003	Pass
Scalar invariance	485.748** (62)	.167 [.153, .181]	.204	.624	-.327	Fail
Partial scalar invariance	108.029** (51)	.067 [.050, .085]	.064	.949	-.002	Pass
OGO (6 items; n = 970)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	6.911 (8)	.000 [.000, .034]	.013	1.000	--	--
Configural invariance	40.094 (32)	.032 [.000, .061]	.029	.990	--	Pass
Metric invariance	58.774 (44)	.037 [.000, .060]	.063	.981	-.009	Pass
Scalar invariance	109.812** (62)	.056 [.039, .073]	.089	.939	-.042	Fail
Partial scalar invariance	72.655 (56)	.035 [.000, .056]	.071	.979	-.002	Pass

Note. N for pooled Midwest sample = 1,000. ADDI = Adolescent Discrimination Distress Index; EIS-B = Ethnic Identity Scale – Brief; MIBI-t = Multidimensional Inventory of Black Identity – Teen (public regard and centrality subscales); OGO = Other Group Orientation; χ^2 = chi-square test of model fit; df = degrees of freedom for chi-square test of model fit; RMSEA = root mean square error of approximation; SRMR = square root mean square residual; CFI = confirmatory fit index; Δ CFI = change in CFI from comparison model (Metric compared to Configural; Scalar compared to Metric; Partial Scalar compared to Metric); Pass = equivalent fit to comparison model (Δ CFI > -.010); Fail = non-equivalent fit to comparison model (Δ CFI $\leq$ -.010).

^aAnalytic models included Asian, Black, and White American adolescents.

* $p < .05$. ** $p < .01$.

Table 3

Item intercepts from partial scalar invariance models by ethnicity-race within Southwest and Midwest samples, respectively

		Intercepts								
		Southwest					Midwest			
Scale	Item	Native American	Asian American	Black American	Latinx American	White American	Asian American	Black American	Latinx American	White American
ADDI ^a	<i>Were you called insulting names by other kids...</i>	--	--	2.40	2.40	2.09 ^b	2.07	2.07	--	1.75 ^b
	<i>Were you treated unfairly by a store clerk or security guard...</i>	--	--	2.18 ^b	1.89 ^b	1.23 ^b	1.52 ^b	2.00 ^b	--	1.14 ^b
	<i>Were you hassled by the police...</i>	--	--	1.53 ^b	1.34 ^b	1.10 ^b	1.05	1.31 ^b	--	1.05
	<i>Were you threatened by other kids...</i>	--	--	1.46	1.46	1.46	1.29	1.29	--	1.19 ^b
	<i>Were you put in a lower ability class or group...</i>	--	--	1.33	1.33	1.13 ^b	1.23	1.23	--	1.06 ^b
	<i>Did people act like they were suspicious of you...</i>	--	--	2.57 ^b	1.93 ^b	1.31 ^b	1.39 ^b	2.33 ^b	--	1.22 ^b
	<i>Were you disciplined unfairly or given school detention...</i>	--	--	1.37	1.37	1.11 ^b	1.15 ^b	1.50 ^b	--	1.06 ^b
	<i>Were you given a lower grade than you deserved...</i>	--	--	1.26	1.26	1.07 ^b	1.21	1.21	--	1.07 ^b
	<i>Did other kids exclude you from their activities...</i>	--	--	1.52	1.52	1.52	1.46	1.46	--	1.26 ^b
	<i>Did you get poor service at a restaurant or fast food place...</i>	--	--	1.57 ^b	1.47 ^b	1.13 ^b	1.37 ^b	1.49 ^b	--	1.08 ^b
EIS-B	<i>I am clear about what my ethnicity means to me.</i>	3.32	3.32	3.32	3.32	3.02 ^b	3.28	3.28	3.28	2.93 ^b
	<i>I have attended events that have helped me learn more about my ethnicity.</i>	2.58	2.58	2.58	2.58	1.67 ^b	2.74	2.74	2.74	1.84 ^b
	<i>I have read books/magazines/newspapers or other materials that have taught me about my ethnicity.</i>	2.34	2.34	2.65 ^b	2.34	1.85 ^b	2.58	2.79 ^b	2.58	2.18 ^b
	<i>I feel negatively about my ethnicity.</i>	1.18	1.18	1.18	1.18	1.41 ^b	1.17	1.17	1.17	1.37 ^b
	<i>I wish I were of a different ethnicity.</i>	1.15	1.15	1.15	1.15	1.30 ^b	1.24	1.24	1.24	1.24
	<i>I know what my ethnicity means to me.</i>	3.42	3.42	3.42	3.42	2.95 ^b	3.24	3.24	3.24	2.84 ^b
	<i>I have participated in activities that have taught me about my ethnicity.</i>	2.69	2.69	2.69	2.69	1.77 ^b	2.78	2.78	2.78	1.93 ^b
	<i>I dislike my ethnicity.</i>	1.11	1.11	1.11	1.11	1.30 ^b	1.08	1.08	1.08	1.22 ^b
	<i>I have a clear sense of what my ethnicity means to me.</i>	3.37	3.37	3.37	3.37	2.93 ^b	3.18	3.18	3.18	2.75 ^b
MIBI-t	<i>Most people think that people of my ethnic group are as smart as people of other ethnic groups.</i>	2.79	3.48 ^b	2.66 ^b	2.79	3.55 ^b	3.83 ^b	2.51	2.51	3.65 ^b
	<i>I feel close to other people of my ethnic group.</i>	3.70	3.70	3.97 ^b	3.70	3.60 ^b	3.85	3.85	3.85	3.66 ^b
	<i>People of other ethnicities think that people of my ethnicity have made important contributions.</i>	3.04	3.28 ^b	3.15 ^b	3.04	3.36 ^b	3.64 ^b	3.23	3.23	3.75 ^b
	<i>I have a strong sense of belonging to people from my ethnic group.</i>	3.72	3.72	3.87 ^b	3.72	3.41 ^b	3.76	3.76	3.76	3.51 ^b
	<i>People think that people of my ethnicity are as good as people of other ethnicities.</i>	2.99	3.60 ^b	2.82 ^b	2.99	3.30 ^b	3.77 ^b	2.84 ^b	3.07 ^b	3.60 ^b
	<i>If I were to describe myself to someone, one of the first things that I would tell them is my ethnicity.</i>	3.65 ^c	3.65 ^c	3.51 ^c	3.51 ^c	2.30 ^b	3.32	3.32	4.04 ^b	2.32 ^b
OGO	<i>I like meeting and getting to know people from ethnic groups other than my own.</i>	3.35	3.35	3.35	3.35	3.35	3.39	3.39	3.39	3.39
	<i>I sometimes feel it would be better if different ethnic groups didn't try to mix together.</i>	1.52	1.52	1.52	1.52	1.42 ^b	1.50	1.50	1.50	1.34 ^b
	<i>I often spend time with people from ethnic groups other than my own.</i>	3.15	3.15	2.95 ^b	3.15	3.15	3.27	3.20 ^b	3.27	3.27
	<i>I don't try to become friends with people from other ethnic groups.</i>	1.41	1.25 ^b	1.41	1.41	1.33 ^b	1.39 ^b	1.46	1.46	1.29 ^b
	<i>I am involved in activities with people from other ethnic groups.</i>	2.99 ^b	3.22	3.22	3.13 ^b	3.22	3.32	3.32	2.97 ^b	3.32

I enjoy being around people from ethnic groups other than my own.

3.41

3.41

3.31^b

3.41

3.41

3.44

3.27^b

3.44

3.44

Note. Item intercepts constrained to be equal within region across ethnic-racial groups, unless otherwise noted. ^a "...because of your race/ethnicity?" ^b Freely estimated within region (i.e., intercept significantly different from other ethnic-racial groups, same region). ^c Constrained between Native and Asian American youth, and between Black and Latinx American youth. Items adapted from "Discrimination Distress During Adolescence," by C. B. Fisher, S. A. Wallace, and R. E. Fenton, 2000, *Journal of Youth and Adolescence*, 29, p. 683; "A Brief Form of the Ethnic Identity Scale: Development and Empirical Validation," by S. Douglass and A. J. Umaña-Taylor, 2015, *Identity: An International Journal of Theory and Research*, 15, p. 53; "A Measure of Racial Identity in African American Adolescents: The Development of the Multidimensional Inventory of Black Identity – Teen," by K. M. Scottham, R. M. Sellers, and H. X. Nguyễn, 2008, *Cultural Diversity and Ethnic Minority Psychology*, 14, p. 306. "The Multigroup Ethnic Identity Measure: A New Scale for Use with Diverse Groups," by J. S. Phinney, 1992, *Journal of Adolescent Research*, 7, p. 172-173.

Table 4

Multi-group CFA results by region for Asian American adolescents in Southwest ($n = 85$) and Midwest ($n = 282$)

EIS-B (9 items; $n = 364$)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	38.595* (24)	.041 [.013, .064]	.028	.985	--	--
Configural invariance	131.355** (48)	.098 [.078, .118]	.054	.933	--	Pass
Metric invariance	132.072** (54)	.089 [.070, .109]	.065	.937	+.004	Pass
Scalar invariance	147.999** (63)	.086 [.068, .104]	.078	.932	-.005	Pass
MIBI-t (6 items; $n = 363$)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	26.949** (8)	.081 [.048, .115]	.045	.946	--	--
Configural invariance	40.536** (16)	.092 [.057, .128]	.056	.937	--	Pass
Metric invariance	40.270** (20)	.075 [.040, .108]	.058	.948	+.011	Pass
Scalar invariance ^a	63.541** (26)	.089 [.062, .117]	.078	.904	-.044	Fail
OGO (6 items; $n = 357$)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	17.105* (8)	.056 [.017, .094]	.013	.966	--	--
Configural invariance	25.254 (16)	.057 [.000, .097]	.033	.969	--	Pass
Metric invariance	28.918 (20)	.050 [.000, .088]	.057	.970	+.001	Pass
Scalar invariance	38.170 (26)	.051 [.000, .084]	.064	.959	-.011	Fail
Partial scalar invariance	32.210 (25)	.040 [.000, .076]	.059	.976	+.006	Pass

Note. N for pooled Asian American sample = 367. EIS-B = Ethnic Identity Scale – Brief; MIBI-t = Multidimensional Inventory of Black Identity – Teen (public regard and centrality subscales); OGO = Other Group Orientation; χ^2 = chi-square test of model fit; df = degrees of freedom for chi-square test of model fit; RMSEA = root mean square error of approximation; SRMR = square root mean square residual; CFI = confirmatory fit index; Δ CFI = change in CFI from comparison model (Metric compared to Configural; Scalar compared to Metric; Partial Scalar compared to Metric); Pass = equivalent fit to comparison model (Δ CFI > -.010); Fail = non-equivalent fit to comparison model (Δ CFI $\leq$ -.010).

^aAll item intercepts non-equivalent (no partial scalar invariance).

* $p < .05$. ** $p < .01$.

Table 5

Multi-group CFA results by region for Black American adolescents in Southwest (n = 569) and Midwest (n = 198)

ADDI (10 items; n = 735)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	139.002** (32)	.067 [.056, .079]	.047	.930	--	--
Configural invariance	182.989** (64)	.071 [.059, .083]	.054	.925	--	Pass
Metric invariance	184.825** (71)	.066 [.054, .078]	.056	.928	+.003	Pass
Scalar invariance	214.620** (81)	.067 [.056, .078]	.061	.916	-.012	Fail
Partial scalar invariance	206.414** (80)	.066 [.055, .077]	.060	.920	-.008	Pass
EIS-B (9 items; n = 753)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	59.567** (24)	.044 [.030, .059]	.031	.969	--	--
Configural invariance	98.482** (48)	.053 [.038, .068]	.036	.960	--	Pass
Metric invariance	103.681** (54)	.049 [.035, .064]	.040	.961	+.001	Pass
Scalar invariance	124.118** (63)	.051 [.037, .064]	.044	.952	-.008	Pass
MIBI-t (6 items; n = 741)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	27.236** (8)	.057 [.034, .081]	.027	.976	--	--
Configural invariance	32.964** (16)	.053 [.027, .079]	.030	.978	--	Pass
Metric invariance	36.276* (20)	.047 [.021, .071]	.037	.979	+.001	Pass
Scalar invariance	47.814** (26)	.048 [.025, .069]	.045	.972	-.007	Pass
OGO (6 items; n = 713)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	10.062 (8)	.019 [.000, .050]	.016	.996	--	--
Configural invariance	13.369 (16)	.000 [.000, .041]	.020	1.000	--	Pass
Metric invariance	15.541 (20)	.000 [.000, .033]	.029	1.000	.000	Pass
Scalar invariance	34.712 (26)	.031 [.000, .055]	.055	.982	-.018	Fail
Partial scalar invariance	21.590 (25)	.000 [.000, .035]	.038	1.000	.000	Pass

Note. N for pooled Black American sample = 767. ADDI = Adolescent Discrimination Distress Index; EIS-B = Ethnic Identity Scale – Brief; MIBI-t = Multidimensional Inventory of Black Identity – Teen (public regard and centrality subscales); OGO = Other Group Orientation; χ^2 = chi-square test of model fit; df = degrees of freedom for chi-square test of model fit; RMSEA = root mean square error of approximation; SRMR = square root mean square residual; CFI = confirmatory fit index; Δ CFI = change in CFI from comparison model (Metric compared to Configural; Scalar compared to Metric; Partial Scalar compared to Metric); Pass = equivalent fit to comparison model (Δ CFI > -.010); Fail = non-equivalent fit to comparison model (Δ CFI $\leq$ -.010).

* $p < .05$. ** $p < .01$.

Table 6

Multi-group CFA results by region for White American adolescents in Southwest (n = 775) and Midwest (n = 463)

ADDI (10 items; n = 1,210)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	86.569** (32)	.038 [.028, .047]	.046	.941	--	--
Configural invariance	173.557** (64)	.053 [.044, .063]	.056	.902	--	Pass
Metric invariance	150.918** (71)	.043 [.034, .053]	.082	.928	+.026	Pass
Scalar invariance	182.339** (81)	.045 [.037, .054]	.091	.909	-.019	Fail
Partial scalar invariance	166.745** (78)	.043 [.034, .052]	.084	.920	-.008	Pass
EIS-B (9 items; n = 1,218)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
3-factor pooled model	45.218** (24)	.027 [.014, .039]	.022	.993	--	--
Configural invariance	86.198** (48)	.036 [.023, .048]	.032	.988	--	Pass
Metric invariance	88.495** (54)	.032 [.020, .044]	.034	.989	+.001	Pass
Scalar invariance	149.009** (63)	.047 [.038, .057]	.052	.974	-.015	Fail
Partial scalar invariance	118.836** (61)	.039 [.029, .050]	.044	.982	-.007	Pass
MIBI-t (6 items; n = 1,209)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	34.811** (8)	.053 [.035, .071]	.025	.977	--	--
Configural invariance	47.071** (16)	.057 [.038, .076]	.028	.974	--	Pass
Metric invariance	49.720** (20)	.050 [.032, .067]	.033	.976	+.002	Pass
Scalar invariance	96.173** (26)	.067 [.053, .081]	.062	.942	-.034	Fail
Partial scalar invariance	54.953** (24)	.046 [.030, .062]	.038	.975	-.001	Pass
OGO (6 items; n = 1,194)	χ^2 (df)	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Pass/Fail
2-factor pooled model	11.929 (8)	.020 [.000, .043]	.014	.995	--	--
Configural invariance	30.515* (16)	.039 [.017, .060]	.023	.984	--	Pass
Metric invariance	34.829* (20)	.035 [.014, .054]	.041	.983	-.001	Pass
Scalar invariance	48.926** (26)	.038 [.021, .055]	.053	.974	-.009	Pass

Note. N for pooled White American sample = 1,238. ADDI = Adolescent Discrimination Distress Index; EIS-B = Ethnic Identity Scale – Brief; MIBI-t = Multidimensional Inventory of Black Identity – Teen (public regard and centrality subscales); OGO = Other Group Orientation; χ^2 = chi-square test of model fit; *df* = degrees of freedom for chi-square test of model fit; RMSEA = root mean square error of approximation; SRMR = square root mean square residual; CFI = confirmatory fit index; Δ CFI = change in CFI from comparison model (Metric compared to Configural; Scalar compared to Metric; Partial Scalar compared to Metric); Pass = equivalent fit to comparison model (Δ CFI > -.010); Fail = non-equivalent fit to comparison model (Δ CFI $\leq$ -.010).

p* < .05. *p* < .01.

Table 7

Item intercepts from partial scalar invariance models by region for Asian, Black, and White American adolescents

Scale	Item	Intercepts					
		Asian American		Black American		White American	
		Southwest	Midwest	Southwest	Midwest	Southwest	Midwest
ADDI ^a	<i>Were you called insulting names by other kids</i>	--	--	2.53 ^b	2.27 ^b	2.03 ^b	1.77 ^b
	<i>Were you treated unfairly by a store clerk or security guard...</i>	--	--	2.24	2.24	1.17	1.17
	<i>Were you hassled by the police...</i>	--	--	1.51	1.51	1.06	1.06
	<i>Were you threatened by other kids...</i>	--	--	1.51	1.51	1.40 ^b	1.22 ^b
	<i>Were you put in a lower ability class or group...</i>	--	--	1.34	1.34	1.08	1.08
	<i>Did people act like they were suspicious of you...</i>	--	--	2.61	2.61	1.25	1.25
	<i>Were you disciplined unfairly or given school detention...</i>	--	--	1.55	1.55	1.07	1.07
	<i>Were you given a lower grade than you deserved...</i>	--	--	1.34	1.34	1.05	1.05
	<i>Did other kids exclude you from their activities...</i>	--	--	1.62	1.62	1.47 ^b	1.28 ^b
	<i>Did you get poor service at a restaurant or fast food place...</i>	--	--	1.62	1.62	1.10	1.10
EIS-B	<i>I am clear about what my ethnicity means to me.</i>	3.24	3.24	3.40	3.40	2.98	2.98
	<i>I have attended events that have helped me learn more about my ethnicity.</i>	2.70	2.70	2.73	2.73	1.73	1.73
	<i>I have read books/magazines/newspapers or other materials that have taught me about my ethnicity.</i>	2.53	2.53	2.76	2.76	1.89 ^b	2.11 ^b
	<i>I feel negatively about my ethnicity.</i>	1.23	1.23	1.19	1.19	1.39	1.39
	<i>I wish I were of a different ethnicity.</i>	1.34	1.34	1.13	1.13	1.27	1.27
	<i>I know what my ethnicity means to me.</i>	3.18	3.18	3.45	3.45	2.91	2.91
	<i>I have participated in activities that have taught me about my ethnicity.</i>	2.80	2.80	2.81	2.81	1.83	1.83
	<i>I dislike my ethnicity.</i>	1.17	1.17	1.08	1.08	1.26	1.26
	<i>I have a clear sense of what my ethnicity means to me.</i>	3.14	3.14	3.39	3.39	2.90 ^b	2.79 ^b
MIBI-t	<i>Most people think that people of my ethnic group are as smart as people of other ethnic groups.</i>	3.44 ^b	3.83 ^b	2.62	2.62	3.59	3.59
	<i>I feel close to other people of my ethnic group.</i>	3.50 ^b	3.87 ^b	3.94	3.94	3.62	3.62
	<i>People of other ethnicities think that people of my ethnicity have made important contributions.</i>	3.25 ^b	3.65 ^b	3.18	3.18	3.38 ^b	3.72 ^b
	<i>I have a strong sense of belonging to people from my ethnic group.</i>	3.70 ^b	3.75 ^b	3.85	3.85	3.45	3.45
	<i>People think that people of my ethnicity are as good as people of other ethnicities.</i>	3.56 ^b	3.77 ^b	2.83	2.83	3.33 ^b	3.57 ^b
	<i>If I were to describe myself to someone, one of the first things that I would tell them is my ethnicity.</i>	3.55 ^b	3.25 ^b	3.51	3.51	2.31	2.31
OGO	<i>I like meeting and getting to know people from ethnic groups other than my own.</i>	3.35	3.35	3.30	3.30	3.40	3.40
	<i>I sometimes feel it would be better if different ethnic groups didn't try to mix together.</i>	1.54	1.54	1.57	1.57	1.37	1.37
	<i>I often spend time with people from ethnic groups other than my own.</i>	3.20	3.20	2.91 ^b	3.15 ^b	3.24	3.24
	<i>I don't try to become friends with people from other ethnic groups.</i>	1.25 ^b	1.42 ^b	1.47	1.47	1.30	1.30
	<i>I am involved in activities with people from other ethnic groups.</i>	3.30	3.30	3.19	3.19	3.29	3.29
	<i>I enjoy being around people from ethnic groups other than my own.</i>	3.40	3.40	3.26	3.26	3.44	3.44

Note. Item intercepts constrained to be equal within ethnic-racial group across regions, unless otherwise noted. ^a "...because of your race/ethnicity?" ^b Freely estimated within ethnic-racial group (i.e., intercept significantly different from same ethnic-racial group across regions). Items adapted from "Discrimination Distress During Adolescence,"

by C. B. Fisher, S. A. Wallace, and R. E. Fenton, 2000, *Journal of Youth and Adolescence*, 29, p. 683; “A Brief Form of the Ethnic Identity Scale: Development and Empirical Validation,” by S. Douglass and A. J. Umaña-Taylor, 2015, *Identity: An International Journal of Theory and Research*, 15, p. 53; “A Measure of Racial Identity in African American Adolescents: The Development of the Multidimensional Inventory of Black Identity – Teen,” by K. M. Scottham, R. M. Sellers, and H. X. Nguyễn, 2008, *Cultural Diversity and Ethnic Minority Psychology*, 14, p. 306. “The Multigroup Ethnic Identity Measure: A New Scale for Use with Diverse Groups,” by J. S. Phinney, 1992, *Journal of Adolescent Research*, 7, p. 172-173.

Table 8

Bivariate correlations by geographic region and ethnic-racial group

	Southwest			Midwest					
Measure	Black American	Latinx American	White American	Asian American	Black American	White American			
	<i>n</i> = 569	<i>n</i> = 547	<i>n</i> = 775	<i>n</i> = 282	<i>n</i> = 198	<i>n</i> = 463			
ADDI	Depressive symptoms								
Overall (10 items)	.24***	.24***	.21***	.28***	.30***	.20***			
Peer discrimination	.29***	.23***	.22***	.26***	.30***	.23***			
School discrimination	.14**	.15**	.13**	.24***	.22**	.06			
Institutional discrimination	.15**	.23***	.14***	.21**	.26**	.15**			
	Southwest			Midwest					
	Native American	Asian American	Black American	Latinx American	White American	Asian American	Black American	Latinx American	White American
	<i>n</i> = 80	<i>n</i> = 85	<i>n</i> = 569	<i>n</i> = 547	<i>n</i> = 775	<i>n</i> = 282	<i>n</i> = 198	<i>n</i> = 57	<i>n</i> = 463
EIS-B	Self-esteem								
Exploration	.24†	.08	.05	.04	.11**	.17**	.22**	.03	.15**
Resolution	.28*	.27*	.23***	.16**	.24***	.30***	.34***	.35*	.25***
Affirmation	.19	.28*	.18***	.20***	.31***	.29***	.25**	.36**	.21***
MIBI-t	Self-esteem								
Centrality	.21†	.33**	.26***	.16***	.28***	.31***	.34***	.45**	.33***
Public Regard	.42***	.32**	.03	.24***	.29***	.25***	.19*	.37**	.35***
OGO	Ethnic-racial identity achievement								
Overall (6 items)	.24*	.11	.09*	.20***	.07†	.13*	.30***	.33*	.16**
Approach (4 items)	.23†	.14	.13**	.22***	.13***	.13*	.33***	.31*	.21***
Avoidance (2 items)	-.16	-.04	.03	-.06	.07†	-.08	-.10	-.23†	.002

Note. ADDI = Adolescent Discrimination Distress Index. EIS-B = Ethnic Identity Scale – Brief; MIBI-t = Multidimensional Inventory of Black Identity – Teen. OGO = Other Group Orientation. Ethnic-racial identity achievement = composite of exploration and resolution (EIS-B).

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.