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Moderating the association between discrimination and adjustment: A Meta-analysis of ethnic/racial identity

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Abstract

The detrimental effects of discrimination are well documented; however, the influence of ethnic/racial identity (ERI) on this association is equivocal. There is theoretical and empirical support for both protective and detrimental effects of ERI. This meta-analysis includes 53 effect sizes from 51 studies and 18,545 participants spanning early adolescence to adulthood to synthesize the interaction of ERI and discrimination for adjustment outcomes. Consistent with existing meta-analyses, discrimination was associated with compromised adjustment; further, this effect was buffered by overall ERI particularly for academic and physical health outcomes. Different ERI dimensions and adjustment outcomes revealed important patterns. ERI exploration increased vulnerabilities associated with discrimination, particularly for negative mental health and risky health behaviors. The exacerbating influence of ERI exploration was strongest at age 24 years old, and more recent publications reported weaker exacerbating effects. In contrast, ERI commitment conferred protection. A composite score of ERI exploration and commitment also conferred protection against discrimination. Sample demographics mattered. The buffering effect of ERI commitment was stronger for Latinx (compared to Asian-heritage) individuals. The buffering effect of public regard was stronger for Asian-heritage (compared to African-heritage) individuals. For positive mental health outcomes, a composite score of ERI exploration and commitment had a stronger buffering effect for Latinx (compared to African-heritage) individuals. For risky health behaviors, Latinx individuals reported a stronger buffering effect of ERI (compared to African-heritage and Asian -heritage) individuals. The current meta-analysis identifies gaps in the literature and offers suggestions for future research.

Keywords

Ethnic/racial identity; Ethnic/racial discrimination; Adjustment outcomes; meta-analysis; Ethnicity/race

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At least four meta-analyses and one systematic review have focused on the effects of discrimination on health and psychological outcomes, reflecting increasing scholarship and

interest in the topic (Benner et al., 2018; Paradies et al., 2015; Pascoe & Richman, 2009; Priest et al., 2013; Schmitt, Branscombe, Postmes, & Garcia, 2014). A majority of this research was published after 2006, signaling a critical accumulation of research in recent years. Together, these syntheses highlight the very damaging impact discrimination has on physical and mental health outcomes from childhood through adulthood. As this inquiry advances, scholarship has begun to focus on the conditions under which the effects of discrimination may be ameliorated or exacerbated, with a growing interest in third variables such as individual differences and/or contextual constructs that influence and moderate the impact of discrimination.

A recent meta-analysis identified key moderators such as group identification, social support, and coping strategies (Pascoe & Richman, 2009). The current meta-analysis extends the literature in three important ways. First, the analysis focuses solely on the impact of ethnic/racial discrimination (ERD), the most researched form of discrimination (Pascoe & Richman, 2009). Second, corresponding with a focus on ethnic/racial experiences, the study employs a domain-specific focus on how ethnic/racial identity (ERI) moderates the effects of ethnic/racial discrimination (ERD). In doing this, the meta-analysis compares predictions put forth by social identity and self-categorization theories (Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Finally, the analysis extends work on the main effect of ERD on adjustment outcomes with a systematic analysis of *the impact of ERI on the association between ERD and outcomes*. The current analysis is distinguished from existing meta-analyses in that the goal is to understand the *joint, interactive effects of ERD and ERI on outcomes*.

There are several hypotheses about how ethnic/racial identity (ERI) might moderate the impact of ethnic/racial discrimination (ERD) on outcomes (Pascoe & Richman, 2009; Yip, Gee, & Takeuchi, 2008). In part, these hypotheses are fueled by ERI theories and research stemming from two distinct, yet related theoretical approaches: one grounded in developmental theories and assumptions (Phinney, 1992), and another in social/personality approaches (Sellers, Rowley, Chavous, Shelton, & Smith, 1997). Each of these approaches brings a theoretical lens to how ERI influences and is influenced by the lived experiences of ethnic/racial minorities, with accompanying measures reflecting these philosophical underpinnings. Indeed, scholars have noted that current ERI conceptualizations and measurements remain ripe for synthesis and integration (Ong, Fuller-Rowell, & Phinney, 2010; Schwartz et al., 2014). While developmental and social/personality approaches may arrive at the study of ERI from different perspectives, they agree that ERI is multidimensional. However, they do not agree upon the specific ERI dimensions, further contributing to a lack of empirical coherence.

The following paragraphs review theories and assumptions of the developmental and social/personality approaches to the study of ERI. We discuss the specific ERI dimensions elaborated in each approach, and corresponding implications for generating complementary and divergent hypotheses about how ERI impacts the link between ERD and adjustment. Finally, we discuss the potential moderating influence of demographic variables such as sex/gender, ethnic/racial group, and age, as well as study characteristics such as cross-sectional

vs. longitudinal designs, United States vs. non-United States samples, and year of publication.

Developmental Models

Building off Erikson's model of ego identity development (1968), Jean Phinney applied the constructs of identity exploration and commitment to the study of ERI and proposed four developmental statuses based on high and low levels of *exploration* and *commitment* (1992). Exploration includes search activities and behaviors related to understanding the role of ethnicity/race in one's overall identity. Commitment reflects affirmation of an ERI and clarity about the role of ethnicity/race in one's self-concept. Together, these two dimensions result in four statuses: low exploration, low commitment = diffused; low exploration, high commitment = foreclosed; high exploration, low commitment = moratorium; and high exploration, high commitment = achieved (Erikson, 1968). One of the key developmental assumptions is that adolescence marks the beginning of identity development, with individuals reporting low levels of exploration and commitment (i.e., diffused) and progressing through more "advanced" identity statuses over time. The diffused status is theorized to be associated with the worst adjustment outcomes, especially compared to high levels of both exploration and commitment (i.e., achieved). Moreover, one's ERI status should not only have direct implications for adjustment, but by extension, also influence coping with ERD. Individuals reporting low levels of either exploration or commitment should cope more poorly with ERD compared to individuals who report high levels of either, or both, exploration and commitment. The impact of ERD is expected to be especially negative for individuals who report low levels of *both* exploration and commitment (i.e., diffused). The assumption is that individuals who have not yet grappled with the meaning of ethnicity/race may not be sociocognitively equipped to cope with the stress of discrimination based on an unexamined social group. This may be especially true for individuals who live in a context such as the United States where issues of ethnicity and race are highly salient in everyday life. There is no published research exploring these assumptions; in fact, little research has employed the four-status model empirically or tested the linear progression of the developmental model itself (cf. Seaton, Scottham, & Sellers, 2006; Yip, Seaton, & Sellers, 2006).

Instead, researchers have favored univariate approaches focused on either ERI exploration or commitment, or a combination of the two. Unfortunately, the literature is limited by the treatment of ERI measures, with early work advocating for a composite score of exploration and commitment, rendering the two developmental processes indistinguishable from each other. However, more recent work has advocated for separating the two dimensions (Phinney & Ong, 2007), resulting in more nuanced hypotheses about how ERI might interact with ERD (Table 1). Although not originally conceptualized as a precarious state, exploration is characterized as a certain level of uncertainty with respect to ethnicity/race (Phinney, 1992). This conceptualization is consistent with recent research suggesting that high levels of ERI exploration may be particularly detrimental for coping with ERD (Torres & Ong, 2010). Conversely, the decision to commit to ERI as an important component of one's self concept, particularly if this commitment is the product of an extensive and informed exploration, likely confers mechanisms to cope with ERD stress (Torres & Ong, 2010). Underscoring

equivocal and conflicting observations about how ERI protects and exacerbates the impact of ERD (Lee, 2005; Yoo & Lee, 2008), we investigate exploration and commitment as related, yet distinct developmental components of ERI.

Social/Personality Models

Rather than focusing on how identity develops, social/personality approaches focus on ERI's content, meaning, and significance. Like developmental models, social/personality approaches consider ERI to be multidimensional; however, the dimensions differ. One of the most prominent of these approaches, the Multidimensional Model of Racial Identity (MMRI) proposed by Sellers and colleagues, elaborates upon a model of collective self-esteem (Crocker, Luhtanen, Blaine, & Broadnax, 1994; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). While the MMRI has several dimensions, we focus on centrality and regard (private and public) which have been the focus of several studies on the links between ERD and outcomes (Sellers, Shelton, et al., 1998). As with the developmental models, the multidimensional nature of the MMRI results in a few possibilities regarding ERI's moderating impact. Yet, the hypotheses set forth by the MMRI are even more layered given foundational social psychological theories predict contrasting but equally plausible alternatives.

Social Identity Theory (SIT). Social identity theory advances that individuals have a host of social groups with which they may identify (e.g., sex/gender, religion; Tajfel & Turner, 1979). Once individuals have selected social identities, they are invested in maintaining and enhancing a positive self-concept. Individuals who make an identity important are also equipped to cope with threats to that identity, protecting one's overall self-concept and adjustment. By extension, individuals with a strong ERI should be equipped to cope with threats posed by ERD. We explore how this theory relates to each dimension of the MMRI model below.

Beginning with centrality - the extent to which ERI is central to one's overall self-concept - SIT predicts that high levels of centrality will buffer ERD effects. Regard is comprised of two dimensions: private and public. Private regard assesses positive affect about membership in one's ethnic/racial group. Public regard assesses perceptions of outgroup views of one's ethnic/racial group (Sellers, Rowley, Chavous, Shelton, & Smith, 1997). SIT makes similar hypotheses for private regard and centrality (i.e., stronger endorsement is more protective). Despite stemming from different disciplinary and theoretical foundations, it is no coincidence that commitment and private regard are hypothesized to buffer the effects of ERD, as scholars have found that positive ethnic/racial affect has adjustment benefits (Rivas-Drake et al., 2014). However, SIT's predictions for public regard are less obvious (Table 1). Logically, it seems that in the interest of maintaining a positive sense of self, individuals with high levels of public regard will believe that others have positive feelings about their group. The result, however, is that high public regard may render ERD experiences more unexpected and detrimental (i.e., exacerbating).

Self-Categorization Theory (SCT). Self-categorization theory provides equally plausible hypotheses for the moderating effects of social identity (Turner et al., 1987). SCT offers an

extension of SIT by acknowledging that individuals can choose to identify with several social groups. Based on immediate contextual cues, social identities become psychologically salient, and ERD is a contextual cue by which an individual's membership in an ethnic/racial group is salient and denigrated. Herein lays a key area of divergence between hypotheses generated by SIT and SCT (Table 1). If ERI centrality is high and represents an important aspect of the individual's identity, SCT predicts that ERD would have a stronger negative impact on outcomes (i.e., exacerbating).

When ERI regard is considered, SIT and SCT diverge on one dimension and not on another. Specifically, according to SCT, feeling good about one's ethnic/racial group (i.e., private regard) may heighten awareness of, and psychological responses to ERD, exerting an exacerbating effect (Lee, 2005). And as with SIT, SCT makes a similar exacerbating prediction for public regard where believing that others view one's ethnic/racial group positively would render ERD especially detrimental (Table 1). Similar to the developmental model, for both SIT and SCT, the specific ERI dimension matters for how ERI is hypothesized to influence the association between ERD and outcomes.

Sample Demographics and Study Characteristics

Finally, this analysis also considers how the impact of ERI dimensions might differ according to sample demographics. Recognizing that all individuals are members of multiple social groups, we consider how sex/gender, ethnicity/race, and age might exert systematic differences. In doing so, we recognize the unique sociocultural and historical experiences of marginalized groups in the United States (Garcia-Coll et al., 1996; Velez-Agosto et al., 2017). Although there is not enough research to conduct a systematic investigation of all the possible combinations of these categories, we conduct the most comprehensive analysis that is feasible given the current data. The current analysis also considers characteristics of the study designs (i.e., cross-sectional vs. longitudinal), as the effects of discrimination have been observed to be weaker in longitudinal designs (Paradies et al., 2015). We also consider the effects of United States vs. non-United States samples as the meaning and significance of ethnicity/race are contextually-situated. Finally, due to concerns about "declining effects" over time, we consider recency of publication (Webster et al., 2014).

The Current Study

Aiming to synthesize the literature on how ERI moderates the impact of ERD on adjustment, the current analysis has five goals. The first is to explore the moderating effect of ERI on the association between ERD and adjustment, testing various hypotheses across developmental and social/personality theories. The second is to examine how the moderating effect of ERI might vary by specific ERI dimension. The third is to consider how the moderating influence of ERI might differ across adjustment indices. The fourth goal combines two and three above and investigates the combined effects of ERI dimension and adjustment. Finally, we explore the role of sample (i.e., sex/gender, ethnicity/race, age) and study (i.e., cross-sectional vs. longitudinal, United States vs. other countries, inclusion of covariates, year of publication) characteristics.

It is important to explicate the use of the term “ethnic/racial” for describing both discrimination and identity. While there are meaningful and important distinctions between “ethnic” and “racial”, the meta-construct “ethnic/racial” describes the phenomenological experiences of how ethnicity, culture, race, and oppression are conflated in everyday life, particularly around identity and discrimination (Umaña-Taylor et al., 2014). Similarly, following other meta-analyses focusing on ERI (Rivas-Drake et al., 2014) “adjustment” refers to a host of outcomes such as mental and physical health, academic outcomes, and risky health behaviors. Finally, while the current analysis includes samples both within and outside of the United States, we use “African-heritage”, “Asian/Asian-heritage”, “Latinx”, “Native-heritage”, and “Whites” as broad pan-ethnic/racial groups.

Method

Literature Search

Literature searches were conducted in the electronic databases PsycINFO, ERIC, Social Sciences Citation Index, Sociological Abstracts, and ProQuest. Search keywords included a combination of discrimination (discrim*, racism, or prejudice) and ethnic/racial identity (eth* identi*, rac* identi*, cultural* identi*, or indigenous* identi*). The literature searches included studies through 2017 that were published in English. This search produced 4,219 records, including 2,926 peer-reviewed journals, 421 book chapters, and 872 theses/dissertations (Figure 1). Each of the 4,219 abstracts or available records about the publication that appeared to meet the following criteria were included: a) measured ethnic/racial discrimination, b) measured ethnic or racial identity, c) measured adjustment outcomes, and d) included quantitative data. Based on this review, 509 studies were retained, either because they met the inclusion criteria or there was insufficient information to exclude them based on the abstract or available records. We reviewed the full texts of these 509 studies, and 413 studies (resulting in 96 retained) were further excluded based on the following criteria: a) did not measure ethnic/racial discrimination directly or exclusively (n = 88; e.g., combined ethnic/racial and sex/gender discrimination), b) did not measure ethnic or racial identity (n = 43; e.g., national identity), c) measured neither ethnic/racial discrimination nor ethnic or racial identity (n = 25), d) outcome did not measure adjustment (n = 60; e.g., parental warmth and conflict, political ideology), e) had multiple of the previous reasons for exclusion (n = 17; e.g., did not measure ethnic/racial discrimination or adjustment), f) did not measure the moderating effect of ERI (n = 105; e.g., main effect correlation, regression or path analyses, mediation), g) was not an empirical paper (n = 61), h) did not include appropriate statistics (n = 11; e.g., was an existing meta-analysis), or i) were not available due to embargo (n = 3). The remaining 96 records were independently read and coded by two members of the research team, resulting in an initial inter-rater reliability of ICC = .89 to 1.00 for continuous variables (e.g., age), and a kappa = .76 to 1.00 for categorical or string variables (e.g., sex/gender). All coding discrepancies were resolved by reviewing the original publication and reaching consensus, resulting in complete agreement.

Of these 96 studies, 46 had sufficient statistical information to calculate effect sizes for the moderated effect of ERI on the adjustment implications of ERD, and 50 were missing

information to compute the effect size (e.g., the change in variance explained by introducing the interaction term into the regression model). Multiple emails were sent to the corresponding authors of these 50 studies, and of the 23 who responded to the data request, several respondents (n = 17) indicated that they did not have access to or were unable to send data or missing information. There were six remaining studies included in the current analysis, yielding 52 studies. Finally, the primary investigator contacted 90 researchers who have published research focused on discrimination, identity, and adjustment outcomes for unpublished results pertaining to these data (including authors of the 105 studies omitted above), resulting in 8 additional independent studies. Of the 60 studies with sufficient statistical information, 58 studies were based on unique datasets and 2 studies were drawn from overlapping data (i.e., the Maryland Adolescent Development in Context Study). Due to requirements around data independence (Lipsey & Wilson, 2001), the study with the larger sample size was retained for analysis. In all, 59 studies (44 peer-reviewed articles, 7 theses/dissertations, and 8 unpublished studies) were included in the final analyses (Figure 1). Among these studies, 53 were United States studies and 6 were non- United States studies. Given the relative distribution of United States and non-United States studies, and because the meaning and significance of ethnicity/race varies across contexts, we present and discuss studies conducted in the United States in the manuscript. However, results including the non-United States samples are presented in Tables S2, S4, S7a, and S7b as supplemental online materials. Of note, results with the inclusion and exclusion of non-United States studies are largely consistent.

Measuring Ethnic/Racial Discrimination

Most of the ERD measures were retrospective self-reports (n = 34) in which individuals indicated how often they experienced ethnic/racial discrimination over their lifetime, a designated period (e.g., past week, past year), or an unspecified amount of time. The most common measures were the Daily Life Experience subscale of the Racism and Life Experience Scale (n = 6; Harrell, 2010), the Everyday Discrimination Scale (n = 3; Williams, Yu, Jackson, & Anderson, 1997), the Adolescent Discrimination Distress Index (n = 3; Fisher, Wallace, & Fenton, 2000), and the Schedule of Racist Events (n = 3; Landrine & Klonoff, 1996). Other measures included the Bicultural Stressors Scale (n = 2; Romero & Roberts, 2003), and Perceived Racism Scale for Latinos (n = 2; Collado-Proctor, 1998). Most measures queried ERD across multiple settings (n = 30), rather than specific to a domain, such as at school or online (n = 4). A few studies employed an experimental exposure to ERD (n = 1) and daily diary reports of ERD (n = 1). Studies in this meta-analysis used 36 different ERD measures.

Measuring Ethnic/Racial Identity

Most ERI measures were based on the developmental model proposed by Phinney (1992) or a social/personality approach conceptualized by Sellers and colleagues (1998). The most common ERI measure was the Multigroup Ethnic Identity Measure (MEIM; n = 13; Roberts et al., 2009; n = 7; Phinney, 1992; n = 6; Phinney & Ong, 2007). The two MEIM subscales are: exploration (e.g., “I have spent time trying to find out about my ethnic group, such as its history, traditions, and customs”), and commitment (e.g., “I am happy that I am a member of the group I belong to”). Most studies computed a composite ERI score combining the two

subscales (n = 17), while analyzing the subscales separately was much less common (n = 10). The second most common measure was the Multidimensional Inventory of Black Identity (MIBI-Teen; n = 3; Scottham, Sellers, & Nguyên, 2008; MIBI; n = 15; Sellers et al., 1997). The most common MIBI subscales included centrality (e.g., "Being Black is important to my self-image"), private regard (e.g., "I am proud to be Black"), and public regard, (e.g., "In general, other groups view Blacks in a positive manner"). Although the MIBI was originally devised for African American samples, the constructs of centrality and regard were derived from the Collective Self-Esteem Scale (Crocker & Luhtanen, 1990). As such, the MIBI has been shown to be valid and reliable in non-African American samples (Yip, Douglass, & Shelton, 2013; Table 2).

Other measures include the Black Racial Identity Attitude Scale (n = 1; Helms & Parham, 1996), Collective Self-Esteem Scale (n = 2; Crocker & Luhtanen, 1990), Cross Racial Identity Scale (CRIS; n = 1; Vandiver, Cross Jr, Worrell, & Fhagen-Smith, 2002; Worrell, Vandiver, Schaefer, Cross Jr, & Fhagen-Smith, 2006), and the Ethnic Identity Scale (n = 1; Umaña-Taylor, 2004). One study (NLAAS: The National Latino and Asian American Survey; Alegria et al., 2004) used a single item to assess ethnic identity (i.e., "How close do you feel, in your ideas and feelings about things, to other people of the same racial and ethnic descent?"; Yip et al., 2008). Two other studies drew from national data sets: National Survey of American Life – Adolescent Supplement (NSAL-A; Jackson et al., 2004) and the Filipino American Community Epidemiological Study (FACES; Takeuchi, 1995–1999). One study also used a self-developed measure (n = 1). Studies in this meta-analysis used 13 different ERI measures.

Measuring Adjustment Outcomes

The current focus on adjustment outcomes encompasses a wide range of indicators. Outcomes were categorized into one of four groups: 1) mental health, 2) academics and cognition, 3) risky health behaviors, and 4) physical health. *Mental health* (n = 40) consists of depressive symptoms (n = 21), other internalizing symptoms including anxiety and distress (n = 18), self-esteem (n = 15), positive adjustment and life satisfaction (n = 6), and social connectedness/competence (n = 7). *Academics and cognition* (n = 15) consists of academic motivation (e.g., academic curiosity, school importance; n = 6), academic achievement (n = 8), perception of school climate and satisfaction (n = 3), problematic school behaviors (n= 1), and cognition (n = 1). *Risky health behaviors* (n = 6) consists of delinquency (n = 6), and substance use (n = 2). Finally, *physical health* (n = 3) encompasses sickness, sleep disturbance, and inflammatory biomarkers.

Measuring Effect Sizes for Interactions between Ethnic/Racial Discrimination and Identity

The effect size of the interaction effect between ERD and ERI on adjustment was assessed with a semipartial correlation between the interaction term and the adjustment outcome (Aloe & Becker, 2012). While synthesizing the Pearson's correlation coefficient between two variables is a common approach for correlational studies and meta-analyses focused on main effects (Borenstein, Hedges, Higgins, & Rothstein, 2009), this approach is not feasible for the current meta-analysis due to the focus on an interaction effect, a product of regression analyses. To estimate the effect size for an interaction, a semipartial correlation is

employed instead (Aloe & Becker, 2012). Semipartial correlations capture the partial association between the dependent variable and a predictor of interest controlling for the effects of other predictors in the model (Aloe & Becker, 2012). It is assessed by the change in the amount of variance explained in the dependent variable by introducing the predictor of interest to the model (Pedhazur, 1982). Equation (1) is a simplified regression model testing the effects of ethnic/racial discrimination (ERD), ethnic/racial identity (ERI), the interaction between ethnic/racial discrimination and identity (INT), and covariates (COVs) for individual adjustment outcomes (ADJ).

$$\text{ADJ} = b_0 + b_{ERD}ERD + b_{ERI}ERI + b_{INT}INT + b_{COVs}COVs, \quad (1)$$

The semipartial correlation captures the association between the interaction term (INT) and adjustment controlling for the other variables in the model and is computed as:

$$r_{sp} = sgn(t_{INT})\sqrt{\Delta R^2_{ADJ}}, \quad (2)$$

where t_{INT} is the t test of the regression coefficient b_{INT}, $sgn(t_{INT})$ indicates that the sign of r_{sp} is the same as the sign of the interaction effect, and ΔR^2_{ADJ} is the change in the amount of variance in adjustment explained by introducing the interaction term to the regression model. When information of ΔR^2_{ADJ} is not available, r_{sp} can also be computed as

$$r_{sp} = \frac{t_{INT}\sqrt{(1 - R^2_{ADJ})}}{\sqrt{(n - p - 1)}}, \quad (3)$$

where t_{INT} is the t test of the regression coefficient of b_{INT}, R^2_{ADJ} is the total amount of variance in adjustment explained by the regression model, n is the sample size, and p is the number of predictors. Of note, the semipartial correlation is influenced by, and a function of, the total amount of variance in adjustment explained by the regression model and the correlation among predictors (Aloe & Becker, 2012). As such, the estimates of effect sizes based on semipartial correlation tend to be smaller as adjustment becomes better controlled for by other predictors in the model (Aloe & Becker, 2012).

To standardize the effect sizes, we transformed the semipartial correlations between the interaction term and adjustment outcomes to the Fisher's Z scale:

$$Z = \frac{1}{2}\ln\left(\frac{1 + r}{1 - r}\right). \quad (4)$$

When a study reported multiple effect sizes, to maintain the independence of the data, we created an average effect size such that each study only contributed one effect size

(Borenstein et al., 2009; Cooper, 2015). Among the 53 studies, 35 studies reported multiple effect sizes, with the number of effect sizes reported in each study ranging from 2 to 60.

Determining whether ERI buffers or exacerbates the impact of ERD on adjustment depends upon the sign of the interaction effect (b_{INT}). The interpretation of the moderating impact of ERD can be approached based on an equivalent version of Equation (1).

$$\mathrm{ADJ} = b_0 + \left(b_{ERD} + b_{INT}ERI\right) \times ERD + b_{ERI}ERI + b_{COVs}COVs, \quad (5)$$

A *positive interaction effect* indicates that higher ERI levels result in higher levels of adjustment compared to lower ERI levels, holding ERD scores and the main effect of ERD on adjustment constant (b_{ERD}). Of note, when the main effect of ERD on adjustment (b_{ERD}) was negative, ERI buffers this negative effect; when the main effect of ERD on adjustment (b_{ERD}) was positive, though less likely, ERI promotes this positive effect. In either case, ERI has a positive, moderating effect on adjustment, referred to as a "buffering effect". In contrast, a *negative interaction effect (b_{INT})* indicates that higher ERI levels result in poorer adjustment compared to lower ERI levels, holding ERD scores and the main effect of ERD on adjustment constant (b_{ERD}). When the main effect of ERD on adjustment (b_{ERD}) was negative, ERI exacerbates this negative effect; when the main effect of ERD on adjustment (b_{ERD}) was positive, though less likely, ERI suppresses this positive effect. In either case, ERI has a negative, moderating effect on adjustment, referred to as an "exacerbating effect".

Analyses Plan

The analyses were conducted in Stata 13.1 (StataCorp, 2013). This manuscript presents the results of the United States studies; however, results for the full sample of United States and non-United States studies are included as online supplemental materials. First, an overall summary effect size was estimated using the random-effects model, allowing true effect sizes to vary among studies and adjusting for study precision as indicated by sample size (Borenstein et al., 2009). The summary effect sizes were then transformed to correlations for interpretation. Finally, forest plots display the effect size and weight (based on sample size) for each study (Figure S1 in online supplemental materials). We also identified potential outliers of the synthesized effect sizes using the metafor package in R (Viechtbauer, 2010). Outliers were determined based on changes in the fitted model by excluding a particular effect size (Viechtbauer & Cheung, 2010). We synthesized the effect sizes without (Table 3) and with the outliers (Table S1 in online supplemental materials).

Publication bias potential was examined with two approaches. First, meta-regression explored differences in effect sizes by publication status (published vs. unpublished; Sterne, Bradburn, & Egger, 2001). Second, small-study effects, an indicator of study precision where studies with smaller sample sizes (i.e., lower precision) have larger effects were also investigated (Sterne, Egger, & Smith, 2001). Small-study effects were examined in three steps. First, effect sizes were displayed by study precision using a funnel plot (Figure 2

presents studies without outliers; see online supplemental Figures 2S to 8S for a full list of funnel plots overall and by ERI and adjustment domains). While a symmetric funnel plot indicates the data likely do not suffer from precision bias, an asymmetric funnel plot indicates that systematic bias may exist between studies with higher versus lower precision. The symmetry of the funnel plot was quantified by Egger's tests (Sterne, Egger, & Moher, 2008). Publication bias is examined for studies without (Table 4) and with outliers (Table S3 in online supplemental materials).

To investigate heterogeneity of effect sizes, Cochran's Q tests and I^2 statistics were computed (Higgins, Thompson, Deeks, & Altman, 2003). High levels of heterogeneity indicate substantial variability across effect sizes and signal the need to explore systematic variations or potential study-level moderators. Since this research topic has been conducted across a wide range of ERI dimensions and outcomes, each of these was explored systematically as sources of heterogeneity. Addressing the second aim of this meta-analysis, the six most common ERI dimensions were explored. Stemming from the developmental approach employing the MEIM (Phinney, 1992), exploration, commitment, and a composite ERI score combining exploration and commitment were included. Representing a social/personality approach, dimensions of centrality, private regard, and public regard were included for studies employing the MIBI (Sellers et al., 1997).

To address our second to fourth research questions, separate summary effect sizes were estimated for: 1) ERI dimension, 2) adjustment domain, and 3) combination of ERI dimension and adjustment domain using the random-effects model. We synthesized the effect sizes without (Table 3) and with outliers (Table S1 in online supplemental materials).

To address the fifth and final research aim, the last set of analyses investigated whether the effect sizes for the interaction effect between ERD and ERI varied by sample and study characteristics, including sample sex/gender, ethnicity/race (i.e., African-heritage, Latinx, Asian-heritage), age, and study characteristics (i.e., inclusion of covariates, cross-sectional versus longitudinal, year of publication). Table 5 presents the descriptives for all sample and study characteristics. Meta-regression analyses were conducted to examine the extent to which each factor was associated with the moderating impact of: 1) ERI overall, 2) the specific ERI dimension, and 3) ERI in each adjustment domain. Results from meta-regression analyses are reported for studies without (Table 6, significant findings only; Table S5a and S5b, all findings included) and with the outliers (Tables S6a and S6b).

Results

The analyses included 61 unique effect sizes from 59 studies including 39,336 individuals. Table 2 presents a summary of all studies included in the meta-analysis, including author(s), sample size, age, sex/gender, race, ethnicity, nativity, study design, publication status, assessments of ERD and ERI, adjustment outcomes, measure reliabilities, correlations between ERD and ERI, regression estimates for the main effect of ethnic/racial discrimination, and the interaction effect between ERD and ERI on adjustment. In the interest of parsimony, two outlying studies and six international studies were removed from the analyses presented in the manuscript; however, the results for these analyses can be

found in online supplemental materials. Results discussed in this manuscript include 53 unique effect sizes from 51 studies including 18,545 participants.

Although this meta-analysis focuses on the moderating role of ERI on the association between ERD and outcomes, to contextualize the interpretation of the moderated effect, we first synthesized the bivariate correlations between ERD and adjustment. Consistent with other meta-analyses exploring the association between ERD and adjustment, there was a negative effect of discrimination on adjustment ($r = -.22$ [−.25, −.18], $Z = 11.20$, $p < .001$).

Moderating Effect of Ethnic/Racial Identity

Next, we addressed the first aim of the study and examined the overall moderating effect of ERI for the association between ERD and adjustment (Table 3, results with outlying studies are presented in supplemental Table S1). Results suggest an overall significant moderating effect of ERI ($r = .027$, [.012, .043], $Z = 3.53$, $p < .001$).

We then investigated two types of publication bias (Table 4) and observed that effect sizes differed significantly between published and unpublished work, with unpublished work being more likely to report an exacerbating effect of ERI. Regarding small-study effects, Egger's tests for asymmetry of the funnel plot was not significant, suggesting small-study effects were unlikely to exist. In addition, the funnel plot charts the synthesized effect sizes as a function of study precision, which appeared to be symmetric (Figure 2), indicating the summary effect size remains the same after adjusting for study precision.

Analysis of an overall ERI construct masks important variation and heterogeneity between studies; and a significant Cochran's Q test indicates significant heterogeneity of the effect sizes. I^2 statistics also indicate that there is considerable variance in effect sizes attributed to heterogeneity. Both tests suggest variation in effect sizes that warrant an investigation of potential moderators. Turning to aims 2–5 of the study, we investigated whether effect sizes varied systematically by: 1) ERI dimension, 2) adjustment domain, 3) combination of ERI dimension and adjustment domains, and 4) sample and study characteristics.

Variations by Specific Ethnic/Racial Identity Dimensions

The inclusion of developmental and social/personality perspectives brings different theories and measures of ERI, which contribute variability across studies and effect sizes. Addressing the second aim of the study, we investigated the moderating effect of ERI for the six most commonly investigated identity dimensions: a composite ERI score combining exploration and commitment (Phinney, 1992), exploration, commitment, private regard, public regard, and centrality (Sellers et al., 1997). Due to concerns about estimate stability, ERI dimensions represented in fewer than three studies (i.e., RIAS, CSE, CRIS, EIS) were not included the analysis (Table 3). The majority of studies employed the MEIM ($n = 26$) while fewer used the MIBI ($n = 15$) measure, and even fewer studies reported employing both measures ($n = 2$). As theoretically expected, important variations in the moderating effects of ERI dimensions emerged.

When ERI was assessed using the MEIM (Phinney, 1992), the most common treatment of the measure was a composite score including the exploration and commitment subscales as a

general ERI construct (k = 17 composite, k = 8 exploration, k = 10 commitment). A small but positive effect size emerged for the composite ERI score (r = .057, [.022, .091], Z = 3.24, p < .01), indicating a buffering effect of the negative association between ERD and adjustment. In exploring potential publication bias (Table 4), we observed significant differences in the effect sizes between published and unpublished work, with unpublished work reporting a weaker buffering effect of the composite ERI score. The composite ERI score comprised of exploration and commitment likely masks important heterogeneity between these two developmental dimensions and recent research has favored exploring the nuances revealed by examining the two dimensions independently (Phinney & Ong, 2007).

Focusing on the ERI exploration subscale, consistent with developmental theory and existing research (Torres & Ong, 2010), we observed a significant negative overall effect size (r = −.062, [−.102, −.021], Z = −3.00, p < .01), suggesting that exploration exacerbates the negative association between ERD and adjustment. There were significant differences in the effect sizes between published and unpublished work, with unpublished work reporting a weaker exacerbating effect of ERI exploration (Table 4). Focusing on ERI commitment, as predicted by developmental theory and existing research (Torres & Ong, 2010), effects were in the opposite direction (r = .045, [.003, .087], Z = 2.09, p < .05), with commitment buffering the negative association between ERD and adjustment. There was no evidence of publication bias by publication type or study precision (Table 4).

Turning to ERI assessed by MIBI, no significant moderating effects emerged for private regard, public regard, or centrality (Table 3). There was no evidence for publication bias with one exception: Egger's test identified significant asymmetry of the funnel plot for centrality (Table 4).

Variations by Adjustment Domains

Next, we turn to our third aim and examined whether the overall moderating effects of ERI (regardless of dimension) depend upon adjustment outcomes across four domains: mental health, academics and cognition, risky health behaviors, and physical health. The majority of the effect sizes focused on positive mental health (k = 20) and negative mental health (k = 32), followed by academics and cognition (k = 16), risky health behaviors (k = 6), and significantly fewer investigating physical health (k = 3). Despite having fewer effect sizes, a significant moderating effect was observed for academics and cognition (r = .028, [.007, .049], Z = 2.57, p < .05) and physical health (r = .098, [.031, .166], Z = 2.86, p < .01), indicating a buffering effect of ERI (Table 3). Unpublished work reported weaker buffering effects of ERI, indicating that publication biases are likely present in the academic domain (Table 4).

Variations by Ethnic/Racial Identity Components and Adjustment Domains

Combining the previous two sets of analyses, we addressed the fourth aim of the study and investigated the extent to which the moderating effects of ERI varied according to different combinations of ERI dimensions and adjustment domains (Table 3).

Positive mental health.—More studies assessed ERI using MEIM (k = 10 composite, k = 4 exploration, and k = 6 commitment) than using MIBI (k = 5 private regard, k = 3 public regard, k = 5 centrality). No significant effects were observed for any of the ERI dimensions (Table 3) and there was no evidence of publication bias (Table 4).

Negative mental health.—Focusing on ERI assessed by MEIM (k = 10 composite, k = 6 exploration, k = 7 commitment), a buffering effect emerged for the composite ERI scores (r = .068, [.024, .112], Z = 3.02, p < .01). Consistent with developmental theory, the moderating effects of ERI exploration were exacerbating (r = −.077, [−.129, −.024], Z = −2.84, p < .01; Table 3). There appeared to be a publication bias with unpublished work reporting a weaker buffering effect of composite ERI and of ERI exploration (Table 4).

Focusing on ERI assessed by MIBI (k = 9 private regard, k = 8 public regard, k = 8 centrality), although no significant moderating effect emerged for any of the three dimensions (Table 3), the effects for private regard, public regard, and centrality were in exacerbating directions consistent with SCT social/personality theories. Egger's test identified significant asymmetry of the funnel plot for public regard (Table 4).

Academics and cognition.—In the academics and cognition domain, no significant effects were observed. Due to concerns about estimate stability, effect sizes were only synthesized when there were at least three independent estimates (i.e., k >= 3) for a specific ERI component, precluding analyses of ERI exploration and commitment (Table 3). Although we did not observe significant moderating effects for MIBI components, private regard showed more exacerbating effects in unpublished work than published work (Table 4).

Risky health behaviors.—Effect sizes were only synthesized when there were three independent estimates or more for a specific ERI dimension (i.e., k >= 3). Applying this criterion resulted in the exclusion of the composite MEIM scores and all MIBI components. However, an exacerbating effect emerged for ERI exploration (r = −.119, [−.182, −.057], Z = −3.71, p < .001) such that individuals with greater ERI exploration who experience ERD reported engaging in more risky health behaviors (Table 3). No significant moderating effect was observed for commitment and there was no evidence of publication bias (Table 4).

Physical health.—Physical health is an understudied outcome for ERD research, and very few effect sizes were observed for the MEIM (k = 0 composite, k = 1 exploration, k = 1 commitment) and the MIBI (k = 2 private regard, k = 1 public regard, k = 2 centrality). The limited studies (i.e., k < 3) precluded the synthesis of effect sizes (Table 3).

Variations by Sample and Study Design Characteristics

The last set of analyses investigates the fifth, and final aim of the study, focusing on the extent to which the moderating effects of ERI varied by sample sex/gender, ethnicity/race, age, the inclusion of covariates, publication year, and cross-sectional vs. longitudinal study design. In addition, the extent to which the moderating effect of each ERI dimension for each adjustment domain varied by sample and design characteristics was also investigated. Table 5 presents the correlations and the descriptive statistics for the sample and study

design characteristics. Correlations suggest that studies that included more African-heritage individuals were less likely to include Asian-heritage and Latinx individuals. Similarly, studies including Asian-heritage individuals were less likely to include Latinx individuals. Meta-regression analyses tested the effect of sample and study characteristics (Table 6).

Sex/gender.—Females were slightly over-represented at 56% (Table 5). Meta-regressions tested the extent to which the effect size of ERI was predicted by the proportion of females in a sample. No significant effect of female representation emerged for the effect size of ERI, for the overall ERI construct, specific ERI dimensions, or adjustment domains (Table S5a).

Ethnicity/race.—African-heritage participants represented 44% of the samples, with Asian-heritage at 29%, and Latinx at 18% (Table 5). Meta-regression analyses investigated the extent to which the proportion of African-heritage, Asian-heritage, and Latinx were linked to the moderating role of ERI (Table 6). The limited representations of Native-heritage (2%), Whites (2%), or "other" (including multiracial, 4%) precluded synthesis. Because African-heritage samples were best-represented, they served as the first reference group, and the proportion of each ethnic/racial group was subsequently added into the model for each set of meta-regression analyses. Parallel analyses with Latinx as the reference group were conducted to obtain all possible comparisons of the three ethnic/racial groups.

Concerning the moderating role of ERI overall, there were no significant effects of the proportion of African-heritage, Asian-heritage, or Latinx participants (Table 6). Turning to specific ERI dimensions, there were no differences for the ERI composite score or exploration; however, there were differences for ERI commitment. The coefficient for commitment was negative for studies that had a higher proportion of Asian-heritage (compared to Latinx; $B = -.128$, SE = .032, $p < .05$), suggesting that the buffering effect was stronger for Latinx than for Asian-heritage individuals. When ERI was assessed by the MIBI, public regard had a stronger buffering effect when studies had a higher proportion of Asian-heritage (compared to African-heritage; $B = .243$, SE = .079, $p < .05$) individuals. Turning to specific adjustment domains, ethnic/racial group differences were observed for positive mental health; studies with a higher proportion of Latinx (vs. African-heritage) reported a stronger buffering effect of ERI ($B = .138$, SE = .049, $p < .05$). Ethnic/racial differences also emerged for risky health behaviors, with Latinx samples reporting a stronger buffering effect of ERI compared to African-heritage ($B = .065$, SE = .013, $p < .05$) and Asian-heritage (studies with a higher proportion of Asian-heritages reported a weaker buffering effect, $B = -.071$, SE = .011, $p < .05$) samples.

Age.—Because studies spanned a large age range (mean age 8.16 to 41.64 years old), sample age was categorized into adolescence (secondary school or earlier), emerging adulthood (college), and adulthood (beyond college) for description purposes. Adolescence and emerging adulthood were similarly represented in this analysis ($n = 23$, $n = 22$, respectively); however, there were only five studies of adults (Table 5). Meta-regression analyses examined age as a continuous variable to consider the extent to which the ERI effect size was predicted by the mean age of the sample (Table 6). Both the linear and quadratic effects of sample age were investigated. No significant linear or quadratic effects

of age were observed for ERI overall; however, there were age differences by ERI dimension. A significant quadratic effect of age emerged for ERI exploration, the exacerbating effect of exploration was most evident when the sample mean age was 24 years old ($B = -1.319$, SE = .283, $p < .01$ for the linear effect; $B = .278$, SE = .060, $p < .01$ for the quadratic effect; Figure 3). No significant age effects emerged for the moderating role of ERI assessed by the MIBI or when examining adjustment domains separately.

Study characteristics.—Finally, meta-regression analyses tested the extent to which the effect size of ERI was predicted by: a) the inclusion of covariates in the interaction estimate, b) publication year (linear and quadratic effect), and c) study design (i.e., cross sectional vs. longitudinal). There were no significant differences in the ERI effect size based on the inclusion of covariates or study design (Table S5b); however, more recent publications reported weaker exacerbating effects for exploration ($B = .244$, SE = .088, $p < .05$; Table 6).

Discussion

While not a stated aim or a unique contribution of this paper, the results corroborate other recent meta-analyses and systematic reviews finding that ERD is harmful for a host of adjustment outcomes (Benner et al., 2018; Paradies et al., 2015; Pascoe & Richman, 2009; Priest et al., 2013; Schmitt et al., 2014). What this meta-analysis contributes is a systematic analysis of how ERI moderates the association between ERD and adjustment. Synthesizing research across over 50 studies and 18,000 unique participants, the results point to an overall buffering effect of ERI. Simply put, ERI matters for how individuals experience ERD; more importantly, ERI generally dampens the negative impact of ERD. Quantitative assessments of heterogeneity across effect sizes (e.g., Q statistic) were significant, signaling differences across studies. When ERI dimensions, adjustment outcomes, the combination of ERI dimension and adjustment, and sample and study characteristics were considered, a more nuanced picture emerged.

Variations by Specific Ethnic/Racial Identity Dimensions

Since developmental ERI models and measures (e.g., MEIM) preceded social/personality ERI models and measures (e.g., MIBI) in time, it is not surprising that studies were more likely to employ the MEIM compared to the MIBI ($n = 26$ vs. 18). The MMRI, and the subsequent development of the MIBI measure, were formulated to unpack the significance and meaning of racialized experiences for African Americans (Sellers, Shelton, et al., 1998). In part, the measure was designed to facilitate the investigation of race-related stress, such as discrimination. In comparison, the MEIM was formulated on ego identity models (Erikson, 1968), and focuses on how adolescents come to form a sense of self over time. As such, these measures offer complementary rather than competing approaches to the study of ERI in the lived experiences of ethnic/racial minorities; notably, however, only two studies in this analysis employed both measures in the same study. However, our analysis possibly underestimates studies that have included both measures with the same sample, with more recent work calling for a more integrated approach focusing on both identity content and processes (Galliher, Rivas-Drake & Dubow, 2017).

Addressing the second goal of the study, the ERI composite score was observed to buffer the negative effects of ERD. Further examination of the MEIM and its sub-dimensions revealed results that were consistent with Eriksonian developmental theories and existing research (Torres & Ong, 2007); namely, that exploration exacerbates the negative effects of ERD, whereas commitment buffers the negative effects of ERD (see Table 1 for summary of results). The adjustment consequences of ERD are particularly damaging when one's overall identity is still under construction and exploration. Recent longitudinal work attempts to unpack the linkages between ERI exploration and ERD and finds ERI exploration to be associated with higher levels of subsequent ERD among Latinx youth (Gonzales-Backen et al., 2017). At the same time, other longitudinal research finds that ERD predicts subsequent ERI exploration (author citation). Taken together, the current literature suggests a synergistic association between ERI exploration and ERD; and this meta-analysis suggests that exploration increases vulnerabilities to ERD. On the other hand, similarly consistent with theory and existing research, ERI commitment seemed to confer protection against the detrimental consequences of ERD. Having a secure and well-developed sense of self as a member of an ethnic/racial group mitigates the negative impact of ERD, likely through a shared sense of common fate (Mayeri, 2001) and a clear understanding of the role that ethnicity/race has for one's identity.

Although exploration and commitment are conceptually and empirically distinct ERI constructs, it is important to note that the study of ERI is inherently focused on individuals and not variables. Indeed, a person-centered approach was fundamental to the original developmental conceptions of identity statuses (Erikson, 1968) but may be muddled by more recent calls for independent investigations of exploration and commitment (Phinney & Ong, 2007). Thus, while we are able to empirically distinguish the moderating impact of exploration and commitment, it is evident that exploration and commitment are correlated and that they come together as indicators of one's ERI (Phinney, Jacoby, & Silva, 2007; Seaton et al., 2006; Yip et al., 2006; Yip, 2014). As evidenced by the results of this meta-analysis, a composite ERI comprised of exploration and commitment is generally adaptive for coping with ERD.

On the other than, turning to ERI as measured by the MIBI; the moderating impact of MIBI dimensions were not significant without considering the ethnicity/race of the sample. Unlike the MEIM which focuses on developmental processes of ERI, the MIBI focuses on the content, meaning, and significance of ERI. As such, it follows that one must consider the unique sociocultural histories and contexts of each ethnic/racial group in order to best appreciate how ERD and ERI interact to impact adjustment outcomes. Moreover, hypotheses about the moderating impact of centrality and private regard (MIBI) contend with the competing predictions of SIT and SCT (Table 1). As such, it may not be surprising that consistent moderating effects of private regard or centrality were not observed. At the same time, it may not be an accident that where SIT and SCT converge in their predictions about how public regard, consistent patterns were apparent after considering sample ethnicity/racial characteristics discussed below.

Variations by Adjustment Domains

As its third aim, this meta-analysis explored whether the moderating effects of ERI depend upon the outcome of interest. Positive and negative mental health were the most common outcome (*ks* = 20 and 32, respectively); however, there was no evidence supporting an overall buffering dynamic of ERI. Despite being a less common foci of research on the effects of ERD, buffering effects were observed for academic and physical health outcomes (*ks* = 16 and 3, respectively). Across ERI dimensions and measures, higher levels of ERI buffered the impact of ERD on academics and cognition. Why might ERI buffer academics and cognition, specifically? Of all the outcomes, the academic domain captures the most "contextually embedded" outcome focused specifically on school settings (e.g., school climate, academic achievement), resulting in minimized noise and variability across studies. The current analysis contributes to discussions about the role of race in schools. For African-heritage youth (the largest ethnic/racial group in this analysis), some scholars have suggested that academic success requires a relinquishing of one's race and accompanying stereotypes (Fordham & Ogbu, 1986). However, the current analysis is consistent with existing research suggesting that embracing ERI may confer benefits in the context of ERD (Taylor et al., 1994). Despite limited research focusing on physical health, ERI also conferred protective benefits. As researchers begin to dig deeper into the ways in which ERD experiences are embodied and experienced physiologically (Adam et al., 2015; Krieger, 1999; Slopen, Lewis, & Williams, 2016), exploring how ERI might mitigate stress responses is an important and fruitful opportunity to disrupt the negative effects of ERD.

Variations by Ethnic/Racial Identity Components and Adjustment Domains

Combining our focus on ERI and adjustment, the fourth aim of this analysis explored the combination of ERI dimensions and specific adjustment outcomes. Due to the limited number of effect sizes (*k* = 53) it was not possible to test all combinations of ERI dimension by each adjustment indicator. Nevertheless, the MEIM composite score seemed to buffer the effects of ERD for negative mental health outcomes, but not positive mental health. Further, decoupling ERI commitment from exploration revealed significant results that were consistent with developmental theory. Namely, exploration exacerbated the negative effects of ERD for both negative mental health and risky health behaviors. These results are consistent with conceptualizations of exploration conferring vulnerabilities (Torres & Ong, 2010). If exploration is associated with uncertainty and lack of clarity, the added stress of coping with ERD seems to have a particularly damaging effect on negative mental health and risky behavioral health indices. High levels of exploration exacerbated the effects of ERD on delinquency, substance use, and socialization with deviant peers. Since most of the research draws from cross-sectional research designs (Table 5), it is not possible to determine whether risky health behaviors were a predictor or consequence of ERD (*k* = 6). However, existing longitudinal research suggests that risky health behaviors may reflect coping strategies related to ERD experiences (Gibbons et al., 2010; Gibbons et al., 2004). Together, these analyses suggest that negative mental health, may be particularly susceptible to both the protective benefits of an ERI composite of exploration and commitment, as well as the detrimental effects of ERI exploration. This observation nicely complements existing synthetic analyses that finds ERD to have more robust effects on negative versus positive mental health outcomes (Priest et al., 2013).

In part, these analyses were constrained by the limited number of studies in a cross-tabulation of ERI dimension by adjustment outcome (Table 3). For example, consistent with other reviews (Priest et al., 2013) physical health outcomes were underrepresented and we were unable to conduct analyses since *k* was less than three across all ERI dimensions. Similarly, for both academics/cognition and risky health behaviors, only six of the 12 possible combinations of ERI dimension and adjustment domain were sufficiently powered for analysis. Our analyses highlight the need for future research to investigate these specific adjustment domains in combination with different ERI components.

Publication Bias in Effect Size Estimates

Publication bias is a concern for any meta-analysis where statistically significant effects may be overrepresented in published (versus unpublished) research. This concern may be especially pertinent to the current analysis where hypothesized interactions between ERI and ERD may not be reported when the interactions are not significant. To quantify this concern, we conducted analyses to account for potential biases. For the overall moderating effect of ERI, unpublished research was more likely to observe an exacerbating effect of ERI. It is not clear whether such research was submitted for publication consideration, whether authors decided not to submit the material for review, or whether non-significant results were removed at the editorial or revision phase. However, this analysis suggests that there may be a certain level of self- or other- censorship when ERI exacerbates the effects of ERD. There is an inherent assumption that ERI is "good" without a more nuanced consideration of the specific dimension of ERI, and the specific conditions and outcomes under investigation. Despite both SIT and SCT theories setting forth hypotheses offering the possibility that high levels of certain ERI dimensions may in fact increase risks associated with ERD, there may still be resistance to acknowledging that higher levels of ERI may not always benefit ethnic/racial minorities.

A slightly different observation emerged when we focused on specific ERI dimensions; results suggested that unpublished research was more likely to exhibit a weaker moderating effect (both for the exacerbating effect of exploration, and the buffering effect of commitment). It is not clear whether these "weaker" effects translate into the arbitrary difference between "statistically significant" effects, but it might suggest concerns related to sufficiently powered studies and the importance of "significant" results for publication. Studies with smaller samples tend to produce larger and less stable effects (Borenstein et al., 2009). Since this meta-analysis focused on ethnic/racial minorities' experiences with ERD, the included studies likely employed more targeted recruitment strategies, smaller samples, and a methodological tension between feasibility and power (Hall, Yip, & Zárate, 2016).

Variations by Sample and Study Design Characteristics

Turning to our fifth and final aim for this manuscript. We explored the moderating effect of sample (i.e., sex/gender, ethnicity/race, age) and study (i.e., cross-sectional vs. longitudinal, inclusion of covariates, publication year) characteristics.

Sex/gender.—There was a slight over-representation of females (56%, Table 5) in this analysis. Despite research concluding that the effects of ERD are gendered (Chavous, Harris,

Rivas, Helaire, & Green, 2004), the meta-regressions did not indicate systematic differences in the moderating role of ERI by the sex/gender composition of the samples. Acknowledging the multiple social identities that individuals elect and how these identities intersect to form new identities (Cole, 2009), it is still likely that ERD is experienced differently by sex/gender (Seaton & Tyson, 2018). However, these differences are likely qualitatively nuanced for African-heritage, Asian-heritage, and Latinx individuals, and the current analysis lacked sufficient samples to embark on this level of comparison.

Ethnicity/race.—Beginning with the seminal Clark doll studies (Clark & Clark, 1939), research and theory on ERI and ERD has been spearheaded by African American scholars such as William Cross, James Jackson, Robert Sellers, and David Williams. Therefore, the 44% representation of African-heritage samples in this meta-analysis is reflective of the historical foundations of this research (Table 5). Asian-heritage was represented in 29% of samples, despite representing only 5% of the United States population. The third largest group included Latinx samples, constituting 18% of the samples, a proportion that is most representative of the United States population at 17%. Finally, a small subset of research included Native American, white, and “other” ethnic/racial groups (including multiracial). Looking ahead, as the United States demographics continue to move towards a white minority population, and the world becomes increasingly globalized, it is important to include more white samples (2% in the current analysis) particularly in contexts and areas in which they are already in the numerical minority. Research on the ERI and ERD experiences of Native American and multiracial groups continues to be underrepresented and should be a focus of future work (Giamo, Schmitt, & Outten, 2012; Hunte & Williams, 2009). Among multiracial individuals, there are opportunities for understanding the ethnic/racial experiences of individuals who have minority-minority (e.g., African-heritage and Latinx) versus minority-majority (e.g., African-heritage and white) backgrounds.

The need to focus on specific ethnic/racial groups is supported by the current analysis. For example, the buffering effect of commitment was stronger for Latinx participants than for Asian-heritage individuals (Table 6). Research on ERI development among Latinx youth finds that it is common for commitment and exploration to increase together over time, which may be attributable to family socialization practices (Douglass & Umaña-Taylor, 2015). Thus, ERI may represent meaningful exploration grounded in familial practices and support, providing protective benefits to Latinx youth. Recently, scholars have also become more concerned with the role of context in ERI development and meaning (Seaton et al., 2017). The ways in which different ethnic/racial groups cope with discrimination and develop an ERI are contextually-bound both in terms of current context but also historical context (Kiang, Tseng & Yip, 2016).

Analyses considering MIBI ERI dimensions with the ethnic/racial composition of the samples yielded effects of public regard not observed in earlier analyses (Aims 2 & 4). That is, the moderating effect of the MIBI measure was not significant until the ethnicity/race of the sample was considered (Aim 5). This suggests that the MIBI’s focus on the psychological significance and meaning may better tap the unique (rather than universal) experiences of ethnic/racial groups. Contrary to social/personality theories, public regard buffered the effects of ERD in samples with a larger proportion of Asian-heritage (compared

to African-heritage) individuals. The sociohistorical experiences of Asian- and African-heritage communities in the United States are unique. Asian- and African-heritage groups have been pitted against each other in a false dichotomy of “good” and “bad” that is perpetuated and maintained by the model minority stereotype (Kim, 1999). Although the model minority myth poses challenges for Asian-heritage community (Cheryan & Bodenhausen, 2000; Lee, 1994), its positive undertones may confer protection against overtly negative ERD. These analyses underscore the need for future research that considers both ethnic/racial group along with specific ERI dimension to appreciate how sociohistorical experiences play out in the daily lived experiences of ethnic/racial minority individuals (Kiang, Tseng, & Yip, 2016; Tseng et al., 2016).

Considering ethnicity/race by adjustment domains, results suggested that ERI had a stronger buffering effect for Latinx (compared to Asian- and African-heritage) for risky health behaviors, suggesting that Latinx individuals derive the strongest buffering effects of ERI for delinquency, substance use, and socialization with deviant peers. As mentioned above, it is not possible to determine whether risky health behaviors were a predictor or consequence of ERD ($k = 3$) and future research should explore whether risky health behaviors constitute discrimination-based coping strategies (Gibbons et al., 2010; Gibbons et al., 2004).

Of note, only 10 studies included samples with more than one racial group, and 17 studies included samples with more than one ethnic group (Table 2). While there are strong justifications for mono- and multiple-group studies (Hall et al., 2016), many studies focus on a single racial or ethnic group where the inclusion of one group was at the expense of excluding another (Table 5). There are very practical reasons for this. Many ERD measures were developed and normed for specific populations, reflecting the unique experiences of these groups. For example, African-heritage samples may be more likely to encounter discriminatory experiences with law enforcement (Williams & Williams-Morris, 2000) while Asian-heritage groups may be more likely to experience foreigner exclusion (Tuan, 2003), necessitating measures that capture qualitatively different ERD experiences. Even within pan-ethnic groups, there are vast differences in ERD based on language, skin color, religion, and cultural customs (Yoo, Gee & Takeuchi, 2009). These experiences may further shift in the context of current events; for example, ERD experienced by brown-skinned Asian-heritage individuals diverged significantly from other Asian-heritage subgroups post September 11 (Lauderdale, 2006). The current literature is not expansive enough to explore every combination of ethnicity and race with every ERI dimension. Including diverse participants to identify and investigate unique and universal experiences across racial and ethnic minority groups will require substantially more resources and attention to issues of measurement equivalence. Further, there are very few places in the United States and in other countries to conduct an in-person study with an equal representation of African-heritage, Asian-heritage, and Latinx participants, while also including a diverse representation of ethnicities within each group; researchers are often limited to mono-group studies due to geographical limitations.

Age.—With developmental theory placing ERI construction squarely in adolescence (Erikson, 1968; Phinney, 1992) and social/personality approaches norming measures on young adults (Sellers et al., 1997), the distribution of adolescent and young adult samples is

in line with theoretical and measurement approaches (Table 5). Age was an important consideration in this analysis. Meta-regression results observed quadratic effects of sample age such that exploration had varying effect sizes at different points in the developmental lifespan and peaking at age 24 (Figure 3). Where individuals are in their ERI construction, and when they experience ERD in the developmental lifespan, matters for the adjustment effects of ERD. Inflection points in young adulthood suggest that this developmental period may be ripe for further investigation. In the current analysis, only 5/51 studies investigated ERD and ERI processes among adults. In addition, the inflection points also suggest a potential parabolic effect in which the effects of ERI may diminish or stabilize over time. Future research focused on young adulthood and beyond may inform how the influence of ERI changes with age.

The age of 24 corresponds to a developmental period that typically occurs post-college graduation, a time when young adults are entering the workforce, pursuing further education, and forming close relationships with significant others (Arnett, 2000, 2007). Just as the transition to college offers opportunities for contact with more diverse individuals, the transition into the workforce offers even more opportunities for young adults to interact with individuals from diverse ethnic/racial, socioeconomic, and age backgrounds; yet, this transition has received less theoretical and empirical attention. There may be a need for developmental theories that extend beyond adolescence into young adulthood (and beyond) to fully capture the developmental trajectories of ERI. For example, Cross and Fhagen-Smith (2001) have proposed a lifespan ERI model in which ERI development continues past adolescence; focusing on lifespan developmental models with a concerted focus on young adults is an important future direction.

Study design.—Despite having a strong developmental foundation, the ERI literature is sorely lacking in longitudinal research, with only three of 51 studies including analyses that spanned more than one measurement point. Even in research that does employ longitudinal methods, measures of ERI, ERD, or adjustment may not be assessed over time, precluding longitudinal analyses. Although the current analysis did not observe any systematic differences between longitudinal and cross-sectional study designs, as an inherently developmental process, ERI changes across adolescence and young adulthood (Seaton et al., 2006; Yip et al., 2006), and the need for longitudinal research exploring linkages between ERI, ERD, and adjustment remains a long-standing gap. In addition, the inclusion of covariates in the analyses also did not seem to exert systematic differences. However, more recent publications reported weaker exacerbating effects of ERI exploration. As a final note, although this manuscript focused on studies in the United States, our supplemental analyses showed no systematic differences between study location for the moderating effects of ERI (see Table S7b in online supplement).

Developmental and Social/Personality Approaches (SIT vs. SCT)

Returning to the theoretical foundations of this meta-analysis, developmental predictions focusing on the exacerbating effects of exploration and the buffering effects of commitment were largely supported. In part, this convergence may be related to the foundational assumptions of the developmental models. Erikson’s ego identity theories were not specific

to ethnicity/race, and Phinney's adaption were not specific to a particular ethnic/racial group. As such, the developmental model should tap universal identity processes; which may explain more consistent observations for these measures. However, measures stemming from social/personality approaches are more focused on the significance and meaning of ERI, which are contextually situated. Perhaps not coincidentally, SIT and SCT offer competing hypotheses regarding the impact of centrality and private regard, the only two ERI dimensions for which no moderated effects were observed. It is yet unclear whether centrality and private regard have no influence as moderators, or whether the effects are too contextually-bound to uncover even in a meta-analysis. As a case in point, the buffering effect of public regard for Asian-heritage (compared to African-heritage) individuals was not hypothesized by either SIT or SCT, therefore, applications of SIT and SCT may vary according to the sociocultural histories of ethnic/racial groups. Rather than an either-or-approach, it is possible that both the SIT and SCT approaches are valid but require more detailed specification of the contexts and conditions under which there is support for each. One distinguishing feature of the two theories is that SCT takes a person by situation approach where features of the immediate context determine how social identities are experienced (Turner et al., 1987). Therefore, self-report surveys predominating this review may not be the most appropriate test of SCT predictions, which may be better tested with experience sampling approaches that consider the interaction of person in context.

Effect Sizes

Even the significant effect sizes (ranging from .02 to .12) were very small compared to conventions set out by Cohen (1992), suggesting that standards set forth for quantifying and describing effect sizes may need to be revisited for research focused on interactions rather than main effects. First, interaction terms tend to have a smaller effect sizes in general. A review study on interaction effects in personality research shows an average effect size of .05 to .08, with an "optimistic" upper bound of .10 (Chaplin, 1991; Zuckerman et al., 1988). Effect sizes are further diminished when "joint" or multiple moderators are considered, as in the case of analyses exploring the joint effects of ERI and adjustment domains. In these cases, the average effect size falls to .03 (Chaplin, 1991). By conventional standards (i.e., alpha = .05), most tests of interactions in personality research will fail to reach significance (Chaplin, 1991). Further, the inclusion of covariates in most regression analyses also reduces the effect size for targeted interaction terms. Of the 51 studies included in our analyses, 43 included covariates in the regression analyses (average number of covariates = 5.51, SD = 4.72). As regression analyses include more covariates, the targeted effect size tends to decrease, yet the inclusion of key controls provides more accurate estimates for our targeted effect sizes (Aloe & Becker, 2012; however, see Yzerbyt, Muller, & Judd, 2004 for a discussion of biases that may be introduced to the estimates of interaction effects when covariates are not carefully tested).

Conclusions and Future Directions

This analysis begins to bring coherence to research that has been plagued by equivocal observations stemming from more than one psychological discipline and approach (Yip, 2018). Taken together, the analysis concludes that ERI does buffer the adjustment effects of ERD. While an overall sense of ERI (as indexed by a composite score of exploration and

commitment) was found to buffer the effects of discrimination, investigating these subdimensions separately suggested that ERI exploration exacerbated the damaging effects of ERD while ERI commitment buffered the negative effects of ERD. Further, the buffering effect of ERI was observed for academics and physical health outcomes. Moreover, combinations of ERI dimension, adjustment outcome, sample and study characteristics were also important to consider.

Due to the limited research, there were several areas of interest that could not be pursued in this meta-analysis. Out of concern for the stability of synthesized effect size estimates, ERI measures, and combinations of ERI measures and outcomes, that yielded less than three studies (i.e., $k<3$) were excluded from our analyses. These ERI measures and combinations included: the RIAS, CSE, CRIS, EIS, the impact of exploration and commitment on academics and cognition, the impact of ERI composite and MIBI components on risky health behaviors, and all analyses focused on physical health outcomes. These areas would benefit from future research, particularly since risky health behaviors and physical health outcomes are especially affected by discrimination (Priest et al., 2013). Despite research finding that ERD source (e.g., strangers, adults, peers) is related to specific outcome domains among adolescents (Benner & Graham, 2013; Hughes et al., 2016), we were also unable to examine differences based on ERD source due to the inability to code this information for all the studies. As suggested by the significant moderated effects for academics and cognition (e.g., more setting-specific outcomes), the type and nature of ERD may play a role in how ERI domains interact to moderate outcomes.

There are several other sample demographics and research design features that could not be explored in the current analysis. For example, over half of the studies did not report the nativity status of their samples, precluding the coding and analysis of this demographic characteristic despite research finding differences in ERD experiences by nativity status (Gee et al., 2006; Lauderdale et al., 2006; Yip et al., 2008). Also, the analysis was unable to consider the role of country and neighborhood characteristics (Witherspoon, Seaton, & Rivas-Drake, 2016), urban versus rural settings (Soto et al., 2012), ethnic/racial composition of the environment (Seaton & Yip, 2009), and relationship with the perpetrator (Benner & Graham, 2013), all of which influence the type and frequency of ERD that individuals experience.

Another issue that would benefit from future review is measurement. In this meta-analysis of 51 studies, there were 36 measures of ERD and 13 measures of ERI. There is no doubt that this variability contributes to the equivocality observed in this literature. The challenges associated with the measurement of ERD (Krieger, 2012) and ERI (Schwartz et al., 2014) have been raised elsewhere; yet, even if scholars found consensus on measurement, there remain facets of both constructs that will introduce nuance and variability. For example, measures of ERI and ERD need to be developmentally tailored; adolescent measures of ERI may differ in language, content, depth, and breadth as compared to adult measures, and the MIBI and the MIBI-Teen reflect this consideration. In addition, there is also within-construct variability that needs to be considered. For example, focusing on ERI exploration, Syed and colleagues (2013) found that ERI exploration includes participation (i.e., EIS) and search (i.e., MEIM), however there was insufficient representation of exploration as

participation to analyze in the current study. Building off of recent syntheses of research on ERI (Umaña-Taylor et al., 2014), it is important for the field to move towards deeper integration of how ERI is conceptualized and measured. Similarly, research on the effects of ERD could also benefit from integration. Recent work focusing on ERD and adolescent outcomes finds peer ERD was associated with compromised socioemotional outcomes and teacher ERD was associated with academic outcomes (Benner & Graham, 2013). Further, adolescent ERD measures focus more on academic domains, while adult measures focus on more diverse experiences (Fisher et al., 2000; Williams, Neighbors, & Jackson, 2008). Finally, a recent meta-analysis suggests that the retrospective timeframe used in ERD measures (e.g., within the last year, recent, or lifetime experiences) impacts the association between ERD and adjustment (Benner et al., 2018). Finally, issues of measurement equivalence across ethnic/racial and age groups need to be considered for both ERI and ERD measures.

In a world where ethnicity/race has profound effects on nearly every aspect of health across the developmental lifespan from prenatal care to life expectancy, and countless experiences in between, developmental scientists must continue to unpack the ways in which ethnicity/race permeates daily life experiences. This meta-analysis evidences the many nuanced and rich ways in which ethnic/racial minorities have constructed a sense of self despite membership in socioculturally marginalized groups. At the same time, it elucidates how these individuals cope with, and are impacted by, the stress of ERD. We hope that this research begets more research so that one day we can better appreciate the various ways in which ethnic/racial minorities thrive despite the embedded layers of stratification and challenge.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

References

Adam EK, Heissel JA, Zeiders KH, Richeson JA, Ross EC, Ehrlich KB, . . . Malanchuk O (2015). Developmental histories of perceived racial discrimination and diurnal cortisol profiles in adulthood: A 20-year prospective study. Psychoneuroendocrinology, 62, 279–291. [PubMed: 26352481]

Alegria M, Takeuchi D, Canino G, Duan N, Shrout P, Meng XL, . . . Woo M (2004). Considering context, place and culture: the National Latino and Asian American Study. International journal of methods in psychiatric research, 13(4), 208–220. [PubMed: 15719529]

Aloe AM, & Becker BJ (2012). An effect size for regression predictors in meta-analysis. Journal of Educational and Behavioral Statistics, 37(2), 278–297.

*. Anglin DM, Lui F, Espinosa A, Tikhonov A, & Ellman L (2016). Ethnic identity, racial discrimination and attenuated psychotic symptoms in an urban population of emerging adults Early Intervention in Psychiatry (pp. n/a--n/a).

Arnett JJ (2000). Emerging adulthood: A theory of development from the late teens through the twenties. American psychologist, 55(5), 469. [PubMed: 10842426]

Arnett JJ (2007). Emerging adulthood: What is it, and what is it good for? Child development perspectives, 1(2), 68–73.

*. Banks B (2015). Microaggressions directed at Black college women: The moderating role of racial identity on self-control depletion Illinois State University Normal, IL.

*. Banks KH (2004). Racial identity and the association between racial discrimination and depressive symptoms. University of Michigan Ann Arbor, MI.

Benner AD, & Graham S (2013). The antecedents and consequences of racial/ethnic discrimination during adolescence: Does the source of discrimination matter? Developmental Psychology, 49(8), 1602. [PubMed: 23106845]

Benner AD, Wang Y, Shen Y, Boyle AE, Polk R, & Cheng YP (2018). Racial/ethnic discrimination and well-being during adolescence: A meta-analytic review. American Psychologist.

Borenstein M, Hedges LV, Higgins J, & Rothstein HR (2009). References: Wiley Online Library.

*. Burrow AL, & Ong AD (2010). Racial identity as a moderator of daily exposure and reactivity to racial discrimination. Self and Identity (Vol. 9, pp. 383–402).

*. Caldwell CH, Kohn-Wood LP, Schmeelk-Cone KH, Chavous TM, & Zimmerman MA (2004). Racial discrimination and racial identity as risk or protective factors for violent behaviors in African American young adults. American Journal of Community Psychology (Vol. 33, pp. 91–105). [PubMed: 15055757]

Chaplin WF (1991). The next generation of moderator research in personality psychology. Journal of personality, 59(2), 143–178. [PubMed: 1880698]

Chavous TM, Harris A, Rivas D, Helaire L, & Green L (2004). Racial stereotypes and gender in context: African Americans at predominantly Black and predominantly White Colleges. Sex Roles, 51(1), 1–16.

*. Chavous TM, Rivas-Drake D, Smalls C, Griffin T, & Cogburn C (2008). Gender matters, too: The influences of school racial discrimination and racial identity on academic engagement outcomes among African American adolescents. Developmental Psychology (Vol. 44, pp. 637–654). [PubMed: 18473633]

Cheryan S, & Bodenhausen GV (2000). When positive stereotypes threaten intellectual performance: The psychological hazards of “model minority” status. Psychological Science, 11(5), 399–402. [PubMed: 11228911]

Clark KB, & Clark MK (1939). The development of consciousness of self and the emergence of racial identification in Negro preschool children. The Journal of Social Psychology, 10(4), 591–599.

Cohen J (1992). A power primer. Psychological bulletin, 112(1), 155. [PubMed: 19565683]

Cole ER (2009). Intersectionality and research in psychology. American psychologist, 64(3), 170. [PubMed: 19348518]

Collado-Proctor SM (1998). The Perceived Racism Scale for Latina/os: A multidimensional assessment of the experience of racism among Latina/os. Duke University.

Cooper H (2015). Research synthesis and meta-analysis: A step-by-step approach (Vol. 2): Sage publications.

Crocker J, & Luhtanen R (1990). Collective self-esteem and ingroup bias. Journal of Personality and Social Psychology, 58(1), 60–67.

Crocker J, Luhtanen R, Blaine B, & Broadnax S (1994). Collective self-esteem and psychological well-being among White, Black, and Asian college students. Personality and social psychology bulletin, 20(5), 503–513.

Cross WE Jr., & Fhagen-Smith P (2001). Patterns of African American identity development: A life span perspective In Jackson B & Wijeyesinghe C (Eds.), New perspectives on racial identity development: A theoretical and practical anthology (pp. 243–270). New York, NY: New York University Press.

*. Dotterer AM, McHale SM, & Crouter AC (2009). Sociocultural factors and school engagement among African American youth: The roles of racial discrimination, racial socialization, and ethnic identity Applied Developmental Science (Vol. 13, pp. 61–73).

Douglass S, & Umaña-Taylor AJ (2015). A brief form of the Ethnic Identity Scale: Development and empirical validation. Identity, 15(1), 48–65.

*. Dulin-Keita A, Hannon Iii, L., Fernandez JR, & Cockerham WC (2011). The defining moment: children’s conceptualization of race and experiences with racial discrimination Ethnic and Racial Studies (Vol. 34, pp. 662–682): Taylor (Aboud) Francis Group. [PubMed: 21532908]

Erikson E (1968). Identity: Youth and Crisis. New York: Norton.

Ferraro KF, & Farmer MM (1996). Double jeopardy to health hypothesis for African Americans: Analysis and critique. Journal of Health and Social Behavior, 37(27–43).

Fisher CB, Wallace SA, & Fenton RE (2000). Discrimination distress during adolescence. Journal of Youth and Adolescence, 29(6), 679–695.

Fordham S, & Ogbu JU (1986). Black students' school success: Coping with the 'burden of acting White '. Urban Review, 18(3), 176–206.

*. French SE, & Chavez NR (2010). The relationship of ethnicity-related stressors and Latino ethnic identity to well-being Hispanic Journal of Behavioral Sciences (Vol. 32, pp. 410–428).

Coll CG, Crnic K, Lamberty G, Wasik BH, Jenkins R, Garcia HV, & McAdoo HP (1996). An integrative model for the study of developmental competencies in minority children. Child development, 67(5), 1891–1914. [PubMed: 9022222]

Galliher RV, Rivas-Drake D, & Dubow EF (2017). Identity development process and content: Toward an integrated and contextualized science of identity. Developmental Psychology, 53(11), 2009–2010. 10.1037/dev0000452 [PubMed: 29094965]

Gee GC, Ryan A, Laflamme DJ, & Holt J (2006). Self-reported discrimination and mental health status among African descendants, Mexican Americans, and other Latinos in the New Hampshire REACH 2010 Initiative: the added dimension of immigration. American Journal of Public Health, 96(10), 1821–1828. [PubMed: 17008579]

Gee GC, Walsemann KM, & Brondolo E (2012). A life course perspective on how racism may be related to health inequities. American Journal of Public Health, 102(5), 967–974. [PubMed: 22420802]

Giamo LS, Schmitt MT, & Robert Outten H (2012). Perceived discrimination, group identification, and life satisfaction among multiracial people: A test of the rejection-identification model. Cultural Diversity and Ethnic Minority Psychology, 18(4), 319. [PubMed: 23066642]

Gibbons FX, Etcheverry PE, Stock ML, Gerrard M, Weng C-Y, Kiviniemi M, & O'hara RE (2010). Exploring the link between racial discrimination and substance use: what mediates? What buffers? Journal of personality and social psychology, 99(5), 785. [PubMed: 20677890]

Gibbons FX, Gerrard M, Cleveland MJ, Wills TA, & Brody G (2004). Perceived discrimination and substance use in African American parents and their children: a panel study. Journal of personality and social psychology, 86(4), 517. [PubMed: 15053703]

Gonzales PM, Blanton H, & Williams KJ (2002). The effects of stereotype threat and double-minority status on the test performance of Latino women. Personality and social psychology bulletin, 28(5), 659–670.

Gonzales-Backen MA, Meca A, Lorenzo-Blanco EI, Des Rosiers SE, Córdova D, Soto DW, ... & Schwartz SJ (2017). Examining the temporal order of ethnic identity and perceived discrimination among Hispanic immigrant adolescents. Developmental Psychology, 54(5), 929–937. [PubMed: 29265827]

Greene ML, Way N, & Pahl K (2006). Trajectories of Perceived Adult and Peer Discrimination among Black, Latino and Asian American Adolescents: Patterns and Psychological Correlates. Developmental Psychology, 42(2), 218–238. [PubMed: 16569162]

Hall GCN, Yip T, & Zárate MA (2016). On becoming multicultural in a monocultural research world: A conceptual approach to studying ethnocultural diversity. American Psychologist, 71(1), 40. [PubMed: 26766764]

Harrell SP (2010). A multidimensional conceptualization of racism-related stress: Implications for the well-being of people of color. American Journal of Orthopsychiatry, 70(1), 42–57.

Helms JE, & Parham TA (1996). The racial identity attitude scale. Handbook of tests and measurements for Black populations, 2, 167–174.

Higgins JP, Thompson SG, Deeks JJ, & Altman DG (2003). Measuring inconsistency in meta-analyses. BMJ: British Medical Journal, 327(7414), 557. [PubMed: 12958120]

Hughes D, Del Toro J, Harding JF, Way N, & Rarick JR (2016). Trajectories of Discrimination Across Adolescence: Associations With Academic, Psychological, and Behavioral Outcomes. Child Development, 87(5), 1337–1351. [PubMed: 27684390]

Hunte HE, & Williams DR (2009). The association between perceived discrimination and obesity in a population-based multiracial and multiethnic adult sample. American Journal of Public Health, 99(7), 1285–1292. [PubMed: 18923119]

*. Huynh VW, & Fuligni AJ (2010). Discrimination hurts: The academic, psychological, and physical well-being of adolescents Journal of Research on Adolescence (Vol. 20, pp. 916–941).

Jackson JS, Torres M, Caldwell CH, Neighbors HW, Nesse RM, Taylor RJ, . . . Williams DR (2004). The National Survey of American Life: a study of racial, ethnic and cultural influences on mental disorders and mental health. International journal of methods in psychiatric research, 13(4), 196–207. [PubMed: 15719528]

*. Jackson KF, Yoo HCB, Guevarra R, & Harrington BA (2012). Role of identity integration on the relationship between perceived racial discrimination and psychological adjustment of multiracial people Journal of Counseling Psychology (Vol. 59, pp. 240–250): American Psychological Association. [PubMed: 22506908]

*. Jackson SC (2015). Contemporary racism and the Asian American experience: The impact of lifetime racial microaggression stress on psychological functioning and risk behavior in Asian American young adults. University of Washington Seattle, WA.

*. Jaramillo J, Mello ZR, & Worrell FC (2016). Ethnic identity, stereotype threat, and perceived discrimination among Native American adolescents Journal of Research on Adolescence (Vol. 26, pp. 769–775). [PubMed: 28453208]

*. Jones MD (2008). Longitudinal and reciprocal effects of ethnic identity and experiences of discrimination on psychosocial adjustment of Navajo (Diné) adolescents. Utah State University Logan, UT.

*. Khaylis A, Waelde L, & Bruce E (2007). The role of ethnic identity in the relationship of race-related stress to PTSD symptoms among young adults Journal of Trauma and Dissociation (Vol. 8, pp. 91–105). [PubMed: 18077286]

Kiang L, Tseng V, & Yip T (2016). Placing Asian American child development within historical context. Child Development, 87(4), 995–1013. [PubMed: 27392795]

Kim CJ (1999). The Racial Triangulation of Asian Americans. Politics and Society, 27(1), 105–138.

*. Kim, S. Y. Unpublished data.

Krieger N (2012). Methods for the scientific study of discrimination and health: an ecosocial approach. American journal of public health, 102(5), 936–944. [PubMed: 22420803]

Landrine H, & Klonoff EA (1996). The schedule of racist events: A measure of racial discrimination and a study of its negative physical and mental health consequences. Journal of Black Psychology, 22(2), 144–168.

Lauderdale D (2006). Birth outcomes for Arabic-named women in California before and after September 11. Demography, 43(1), 185–201. [PubMed: 16579214]

Lauderdale DS, Wen M, Jacobs EA, & Kandula NR (2006). Immigrant perceptions of discrimination in health care: the California Health Interview Survey 2003. Medical care, 914–920. [PubMed: 17001262]

*. Lee JP, Lee RM, Hu AW, & Kim OM (2015). Ethnic identity as a moderator against discrimination for transracially and transnationally adopted Korean American adolescents Asian American Journal of Psychology (Vol. 6, pp. 154–163): Educational Publishing Foundation. [PubMed: 26273427]

*. Lee RM (2003). Do ethnic identity and other-group orientation protect against discrimination for Asian Americans? Journal of Counseling Psychology (Vol. 50, pp. 133–141): American Psychological Association.

*. Lee RM(2005). Resilience against discrimination: Ethnic identity and other-group orientation as protective factors for Korean Americans. Journal of Counseling Psychology, 52(1), 36–44.

Lee SJ (1994). Behind the Model-Minority stereotype: Voices of high- and low-achieving Asian American students. Anthropology and Education Quarterly, 25(4), 413–429.

*. Lewin A, Mitchell SJ, Rasmussen A, Sanders-Phillips K, Joseph JG, & Rasmussen A (2011). Do human and social capital protect young African American mothers from depression associated with ethnic discrimination and violence exposure? Journal of Black Psychology (Vol. 37, pp. 286–310).

*. Liang CTH, & Fassinger RE(2008). The role of collective self-esteem for Asian Americans experiencing racism-related stress: A test of moderator and mediator hypotheses Cultural Diversity and Ethnic Minority Psychology (Vol. 14, pp. 19–28): Educational Publishing Foundation. [PubMed: 18229997]

Lipsey MW, & Wilson DB (2001). Practical meta-analysis (Vol. 49): Sage publications Thousand Oaks, CA.

*. Matthews CJ (2012). Generational status, racial, and ethnic identity, and psychological well-being among Afro-Caribbean college students. Fordham University New York, NY.

Mayeri S (2001). "A Common Fate of Discrimination": Race-Gender Analogies in Legal and Historical Perspective. The Yale Law Journal, 110(6), 1045–1087.

*. Mohr, J. J. Unpublished data.

*. Mossakowski KN (2003). Coping with perceived discrimination: Does ethnic identity protect mental health? Journal of Health and Social Behavior (Vol. 44, pp. 318). [PubMed: 14582311]

*. Myrick SE, & Martorell GA (2011). Sticks and stones may break my bones: Protective factors for the effects of perceived discrimination on social competence in adolescence Personal Relationships (Vol. 18, pp. 487–501).

Neblett EW, & Roberts SO (2013). Racial identity and autonomic responses to racial discrimination. Psychophysiology, 50(10), 943–953. [PubMed: 23889076]

Ong AD, Fuller-Rowell TE, & Phinney JS (2010). Measurement of ethnic identity: Recurrent and emergent issues. Identity: An International Journal of Theory and Research, 10(1), 39–49.

Paradies Y, Ben J, Denson N, Elias A, Priest N, Pieterse A, . . . Gee G (2015). Racism as a determinant of health: a systematic review and meta-analysis. PloS one, 10(9), e0138511.

Pascoe EA, & Richman LS (2009). Perceived discrimination and health: a meta-analytic review. Psychological bulletin, 135(4), 531. [PubMed: 19586161]

Pedhazur EJ (1982). Multiple regression and behavioral science. Explanation and Prediction, 2.

Phinney JS (1992). The Multigroup Ethnic Identity Measure: A new scale for use with diverse groups. Journal of Adolescent Research, 7(2), 156–176.

Phinney JS, & Ong AD (2007). Conceptualization and measurement of ethnic identity: Current status and future directions. Journal of Counseling Psychology, 54(3), 271.

Phinney JS, Jacoby B, & Silva C (2007). Positive intergroup attitudes: The role of ethnic identity. International Journal of Behavioral Development, 31(5), 478–490.

*. Pieterse AL, & Carter RT (2010). The role of racial identity in perceived racism and psychological stress among Black American adults: Exploring traditional and alternative approaches Journal of Applied Social Psychology (Vol. 40, pp. 1028–1053).

Priest N, Paradies Y, Trenerry B, Truong M, Karlsen S, & Kelly Y (2013). A systematic review of studies examining the relationship between reported racism and health and wellbeing for children and young people. Social science & medicine, 95, 115–127. [PubMed: 23312306]

R. Williams D, & Williams-Morris R (2000). Racism and mental health: The African American experience. Ethnicity and health, 5(3–4), 243–268. [PubMed: 11105267]

*. Rivas-Drake D, Hughes D, & Way N (2008a). A closer look at peer discrimination, ethnic identity, and psychological well-being among urban Chinese American sixth graders. Journal of Youth and Adolescence, 37(1), 12–21.

Rivas-Drake D, Syed M, Umaña-Taylor A, Markstrom C, French S, Schwartz SJ, . . . Racial Identity in the 21st Century Study, G. (2014). Feeling Good, Happy, and Proud: A Meta-Analysis of Positive Ethnic–Racial Affect and Adjustment. Child Development, 85(1), 77–102. doi:10.1111/cdev.12175 [PubMed: 24490893]

Roberts RE, Phinney JS, Masse LC, Chen YR, Roberts CR, & Romero AJ (1999). The structure of ethnic identity of young adolescents from diverse ethnocultural groups. The Journal of Early Adolescence, 19(3), 300–322.

*. Romero AJ, Edwards LM, Fryberg SA, & Orduña M (2014). Resilience to discrimination stress across ethnic identity stages of development Journal of Applied Social Psychology (Vol. 44, pp. 1–11).

*. Romero AJ, & Roberts RE (2003). The impact of multiple dimensions of ethnic identity on discrimination and adolescents' self-esteem. Journal of Applied Social Psychology, 33(11), 2288–2305.

Schmitt MT, Branscombe NR, Postmes T, & Garcia A (2014). The consequences of perceived discrimination for psychological well-being: a meta-analytic review. Psychological Bulletin, 140(4), 921. [PubMed: 24547896]

Schwartz SJ, Syed M, Yip T, Knight GP, Umaña-Taylor AJ, Rivas-Drake D, . . . Racial Identity in the 21st Century Study, G. (2014). Methodological Issues in Ethnic and Racial Identity Research With Ethnic Minority Populations: Theoretical Precision, Measurement Issues, and Research Designs. Child Development, 85(1), 58–76. doi:10.1111/cdev.12201 [PubMed: 24490892]

Scottham KM, Sellers RM, & Nguyên HX (2008). A measure of racial identity in African American adolescents: the development of the Multidimensional Inventory of Black Identity--Teen. Cultural Diversity and Ethnic Minority Psychology, 14(4), 297. [PubMed: 18954165]

*. Seaton EK (2009). Perceived racial discrimination and racial identity profiles among African American adolescents. Cultural Diversity and Ethnic Minority Psychology (Vol. 15, pp. 137–144). [PubMed: 19364200]

Seaton EK, Quintana S, Verkuyten M, & Gee GC (2017). Peers, policies, and place: The relation between context and ethnic/racial identity. Child development, 88(3), 683–692. [PubMed: 28339101]

Seaton EK, Scottham KM, & Sellers RM (2006). The Status model of racial identity development in African American adolescents: Evidence of structure, trajectories and well-being. Child Development.

Seaton EK, & Tyson K (2018). The Intersection of Race and Gender Among Black American Adolescents. Child development. 10.1111/cdev.13093

Seaton EK, & Yip T (2009). School and neighborhood contexts, perceptions of racial discrimination, and psychological well-being among African American adolescents. Journal of Youth and Adolescence, 38(2), 153–163. doi:10.1007/s10964-008-9356-x [PubMed: 19636714]

*. Sellers RM, Copeland-Linder N, Martin PP, & Lewis RLH (2006). Racial identity matters: The relationship between racial discrimination and psychological functioning in African American adolescents Journal of Research on Adolescence (Vol. 16, pp. 187–216).

Sellers RM, Rowley SAJ, Chavous TM, Shelton JN, & Smith MA (1997). Multidimensional Inventory of Black Identity: A preliminary investigation of reliability and construct validity. Journal of Personality and Social Psychology, 73, 805–815.

*. Sellers RM, & Shelton JN (2003). The role of racial identity in perceived racial discrimination Journal of Personality and Social Psychology (Vol. 84, pp. 1079–1092). [PubMed: 12757150]

Sellers RM, Shelton JN, Cooke DY, Chavous TM, Rowley SAJ, & Smith MA (Eds.). (1998). A Multidimentional Model of Racial Identity: Assumptions, Findings, and Future Directions. Hampton, VA: Cobb & Henry.

Sellers RM, Smith MA, Shelton JN, Rowley SAJ, & Chavous TM (1998). Multidimensional model of racial identity: A reconceptualization of African American racial identity. Personality and Social Psychology Review, 2(1), 18–39. [PubMed: 15647149]

Slopen N, Lewis TT, & Williams DR (2016). Discrimination and sleep: a systematic review. Sleep medicine, 18, 88–95. [PubMed: 25770043]

Sidanius J, Pratto F, & Rabinowitz JL (1994). Gender, ethnic status, and ideological asymmetry: A social dominance interpretation. Journal of Cross-Cultural Psychology, 25(2), 194–216.

*. Smalls C, White R, Chavous T, & Sellers R (2007). Racial ideological beliefs and racial discrimination experiences as predictors of academic engagement among African American adolescents Journal of Black Psychology (Vol. 33, pp. 299–330).

Soto JA, Armenta BE, Perez CR, Zamboanga BL, Umaña-Taylor AJ, Lee RM, . . . Krauss Whitbourne S (2012). Strength in numbers? Cognitive reappraisal tendencies and psychological functioning among Latinos in the context of oppression. Cultural Diversity and Ethnic Minority Psychology, 18(4), 384. [PubMed: 23066643]

StataCorp L (2013). Stata: release 13-statistical software. College Station, TX.

*. Stein GL, Kiang L, Supple AJ, & Gonzalez LM (2014). Ethnic identity as a protective factor in the lives of Asian American adolescents Asian American Journal of Psychology (Vol. 5, pp. 206–213): Educational Publishing Foundation.

Sterne J, Bradburn M, & Egger M (2001). Meta-analysis in stata: systematic reviews in health care. London: Br Med J Publication Group, 364.

Sterne JA, Egger M, & Moher D (2008). Addressing reporting biases. Cochrane handbook for systematic reviews of interventions: Cochrane book series, 297–333.

Sterne JA, Egger M, & Smith GD (2001). Systematic reviews in health care: Investigating and dealing with publication and other biases in meta-analysis. BMJ: British Medical Journal, 323(7304), 101. [PubMed: 11451790]

Syed M, Walker LH, Lee RM, Umaña-Taylor AJ, Zamboanga BL, Schwartz SJ, . . Huynh Q-L (2013). A two-factor model of ethnic identity exploration: Implications for identity coherence and well-being. Cultural Diversity and Ethnic Minority Psychology, 19(2), 143. [PubMed: 23647328]

Tajfel H, & Turner JC (1979). An integrative theory of intergroup conflict In Austin WG & Worchel S (Eds.), The Social Psychology of Intergroup Relations. Monterey, CA: Brooks-Cole.

Takeuchi, D. (1995-1999). Filipino American Community Epidemiological Study (FACES). In M. I.-u. C. f. P. a. S. R. Ann Arbor (Ed.).

Taylor RD, Casten R, Flickinger SM, Roberts D, & Fulmore CD (1994). Explaining the school performance of African-American adolescents. Journal of Research on Adolescence, 4(1), 21–44.

*. Thomas ON, Caldwell CH, Faison N, & Jackson JS (2009). Promoting academic achievement: The role of racial identity in buffering perceptions of teacher discrimination on academic achievement among African American and Caribbean Black adolescents Journal of Educational Psychology (Vol. 101, pp. 420–431): American Psychological Association.

*. Torres L, & Ong AD (2010). A daily diary investigation of latino ethnic identity, discrimination, and depression. Cultural Diversity and Ethnic Minority Psychology, 16(4), 561. [PubMed: 21058819]

*. Torres L, Yznaga SD, & Moore KM (2011). Discrimination and Latino psychological distress: The moderating role of ethnic identity exploration and commitment. American Journal of Orthopsychiatry (Vol. 81, pp. 526–534). [PubMed: 21977938]

*. Tovar-Murray D, Jenifer ES, Andrusyk J, D'Angelo R, & King T(2012). Racism-related stress and ethnic identity as determinants of African American college students career aspirations The Career Development Quarterly (Vol. 60, pp. 254–262): Blackwell Publishing Ltd.

*. Trask-Tate A (2011). The role of racial identity in promoting the academic expectations of African American adolescents. Tulane University New Orleans, LA.

Tseng V, Kiang L, Mistry J, Mistry RS, Wang Y, & Yoshikawa H (2016). Taking stock and moving forward: Research on Asian American child development. Child development, 87(4), 989–994. [PubMed: 27392794]

Tuan M (2003). Forever Foreigners or Honorary Whites? New Brunswick: Rutgers University Press.

Turner JC, Hogg MA, Oakes PJ, Reicher SD, & Wetherell MS (1987). Rediscovering the social group: A self-categorization theory: Basil Blackwell.

*. Tynes BM, Umaña-Taylor AJ, Rose CA, Lin J, & Anderson CJ (2012). Online racial discrimination and the protective function of ethnic identity and self-esteem for African American adolescents. Developmental Psychology (Vol. 48, pp. 343–355). [PubMed: 22369340]

Umana-Taylor AJ (2004). Ethnic identity and self-esteem: Examining the role of social context. Journal of Adolescence, 27, 139–146. [PubMed: 15023513]

*. Umaña-Taylor AJ, Wong JJ, Gonzales NA, & Dumka LE (2012). Ethnic identity and gender as moderators of the association between discrimination and academic adjustment among Mexican-origin adolescents Journal of Adolescence (Vol. 35, pp. 773–786). [PubMed: 22152761]

Umaña-Taylor AJ, Quintana SM, Lee RM, Cross WE, Rivas-Drake D, Schwartz SJ, . . . Seaton E (2014). Ethnic and racial identity during adolescence and into young adulthood: An integrated conceptualization. Child Development, 85(1), 21–39. [PubMed: 24490890]

*. Unger, J. B. Unpublished data.

Vandiver BJ, Cross WE Jr, Worrell FC, & Fhagen-Smith PE (2002). Validating the Cross Racial Identity Scale. Journal of Counseling psychology, 49(1), 71.

Vélez-Agosto NM, Soto-Crespo JG, Vizcarrondo-Oppenheimer M, Vega-Molina S, & García Coll C (2017). Bronfenbrenner's bioecological theory revision: Moving culture from the macro into the micro. Perspectives on Psychological Science, 12(5), 900–910. [PubMed: 28972838]

*. Vera E, Vacek K, Coyle L, Stinson J, Mull M, Doud K, . . . Langrehr K (2011). An examination of culturally relevant stressors, coping, ethnic identity, and subjective well-being in urban, ethnic minority adolescents. In Sink C(Ed.), Professional School Counseling (Vol. 15, pp. 55–66).

Watson BDM, & Miller RL, (2002). Strategies for managing heterosexism used among African American, gay, and bisexual men. Journal of Black Psychology, 28, 371–391.

Webster GD, Graber JA, Gesselman AN, Crosier BS, & Schember TO (2014). A life history theory of father absence and menarche: a meta-analysis. Evolutionary Psychology, 12(2), 147470491401200202.

*. Wei M, Wang KT, Heppner PP, & Du Y (2012). Ethnic and mainstream social connectedness, perceived racial discrimination, and posttraumatic stress symptoms Journal of Counseling Psychology (Vol. 59, pp. 486–493): American Psychological Association. [PubMed: 22774871]

Williams DR, Neighbors HW, & Jackson JS (2008). Racial/ethnic discrimination and health: Findings from community studies. American Journal of Public Health, 98(Suppl9), S29–S37. [PubMed: 18687616]

Williams DR, Yu Y, Jackson JS, & Anderson NB (1997). Racial Differences in Physical and Mental Health Socio-economic Status, Stress and Discrimination. Journal of health psychology, 2(3), 335–351. [PubMed: 22013026]

*. Williams JL, Aiyer SM, Durkee MI, & Tolan PH (2014). The protective role of ethnic identity for urban adolescent males facing multiple stressors Journal of Youth and Adolescence (Vol. 43, pp. 1728–1741). [PubMed: 24318745]

Witherspoon DP, Seaton EK, & Rivas-Drake D (2016). Neighborhood characteristics and expectations of racially discriminatory experiences among African American adolescents. Child Development, 87(5), 1367–1378. [PubMed: 27684392]

*. Woods TA (2006). Racial socialization, racial identity, and achievement in the context of perceived discrimination : understanding the development of African American middle school youth. University of North Carolina at Chapel Hill Chapel Hill, NC.

Worrell FC, Vandiver BJ, Schaefer BA, Cross WE Jr, & Fhagen-Smith PE (2006). Generalizing nigrescence profiles: Cluster analyses of Cross Racial Identity Scale (CRIS) scores in three independent samples. The Counseling Psychologist, 34(4), 519–547.

*. Yip, T. Unpublished data.

Yip T (2014). Ethnic Identity in Everyday Life: The Influence of Identity Development Status. Child Development, 85(1), 205–219. doi:10.1111/cdev.12107 [PubMed: 23581701]

Yip T (2018). Ethnic/racial identity—A double-edged sword? Associations with discrimination and psychological outcomes. Current Directions in Psychological Science, 27(3), 170–175. [PubMed: 30581253]

Yip T, Douglass S, & Shelton JN (2013). Daily intragroup contact in diverse settings: Implications for Asian adolescents' ethnic identity. Child development, 84(4), 1425–1441. [PubMed: 23294295]

Yip T, Gee GC, & Takeuchi DT (2008a). Racial discrimination and psychological distress: The impact of ethnic identity and age among immigrant and United States-born Asian adults. Developmental Psychology, 44(3), 787–800. doi:10.1037/0012-1649.44.3.787 [PubMed: 18473644]

*. Yip T, Gee GC, & Takeuchi DT (2008b). Racial discrimination and psychological distress: The impact of ethnic identity and age among immigrant and United States–born Asian adults Developmental Psychology (Vol. 44, pp. 787–800). [PubMed: 18473644]

Yip T, Seaton EK, & Sellers RM (2006). African American Racial Identity Across the Lifespan: Identity Status, Identity Content, and Depressive Symptoms. Child Development, 77(5), 1504–1517. doi:10.1111/j.1467-8624.2006.00950.x [PubMed: 16999814]

Yoo HC, Gee GC, & Takeuchi D (2009). Discrimination and health among Asian American immigrants: Disentangling racial from language discrimination. Social Science & Medicine, 68(4), 726–732. [PubMed: 19095340]

*. Yoo HC, & Lee RM (2005). Ethnic identity and approach-type coping as a moderator of the racial discrimination/well-being relation in Asian Americans Journal of Counseling Psychology (Vol. 52, pp. 497–506): American Psychological Association.

Yoo HC, & Lee RM (2008). Does ethnic identity buffer or exacerbate the effects of frequent racial discrimination on situational well-being of Asian Americans? Journal of Counseling Psychology, 55(1), 63.

Yzerbyt VY, Muller D, & Judd CM (2004). Adjusting researchers' approach to adjustment: On the use of covariates when testing interactions. Journal of Experimental Social Psychology, 40(3), 424–431.

Zuckerman M, Koestner R, DeBoy T, Garcia T, Maresca BC, & Sartoris JM (1988). To predict some of the people some of the time: A reexamination of the moderator variable approach in personality theory. Journal of Personality and Social Psychology, 54(6), 1006.

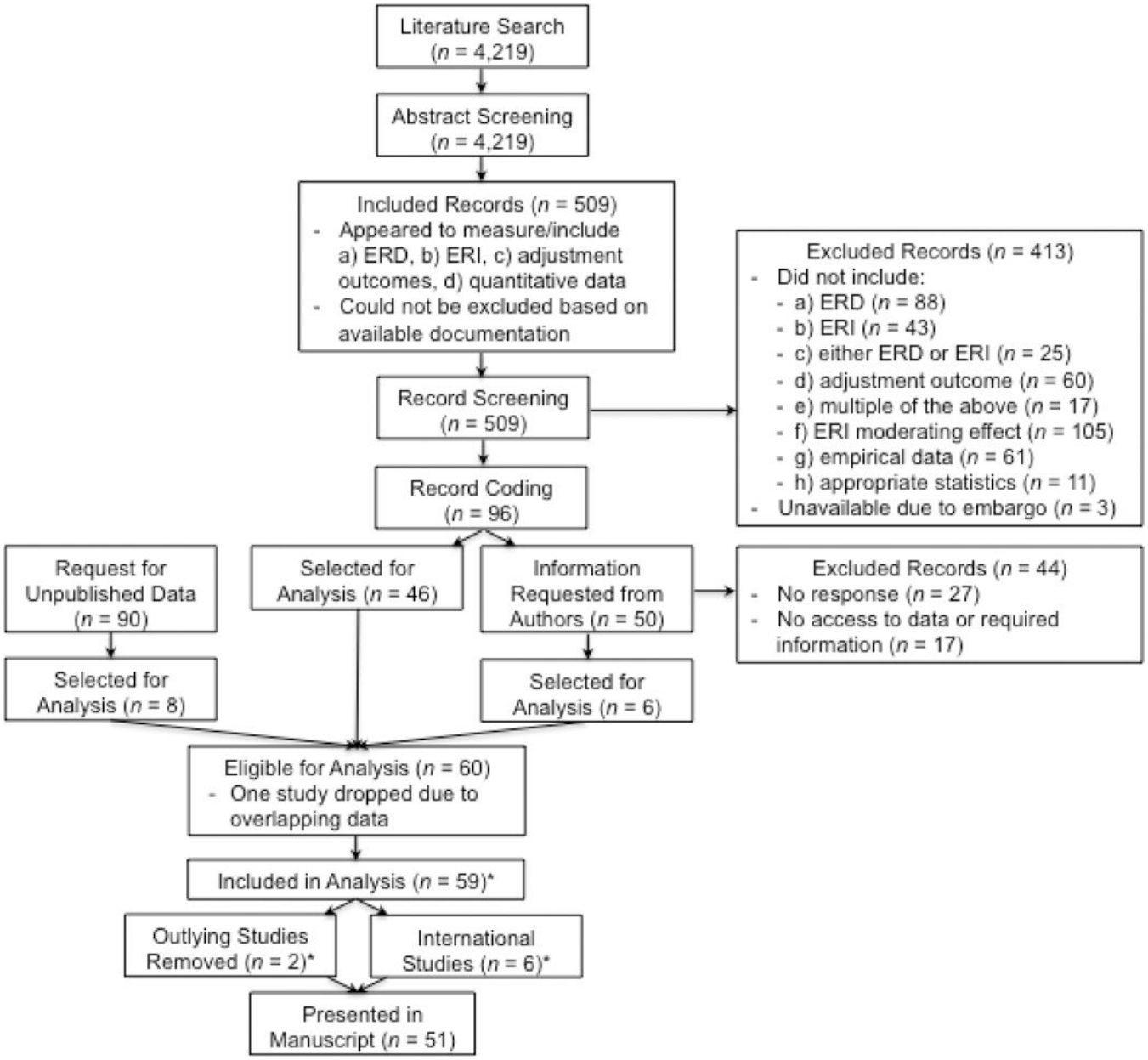

Figure 1.

Flow chart for the inclusion of studies. *Analyses including outlying and international studies are presented as supplemental material.

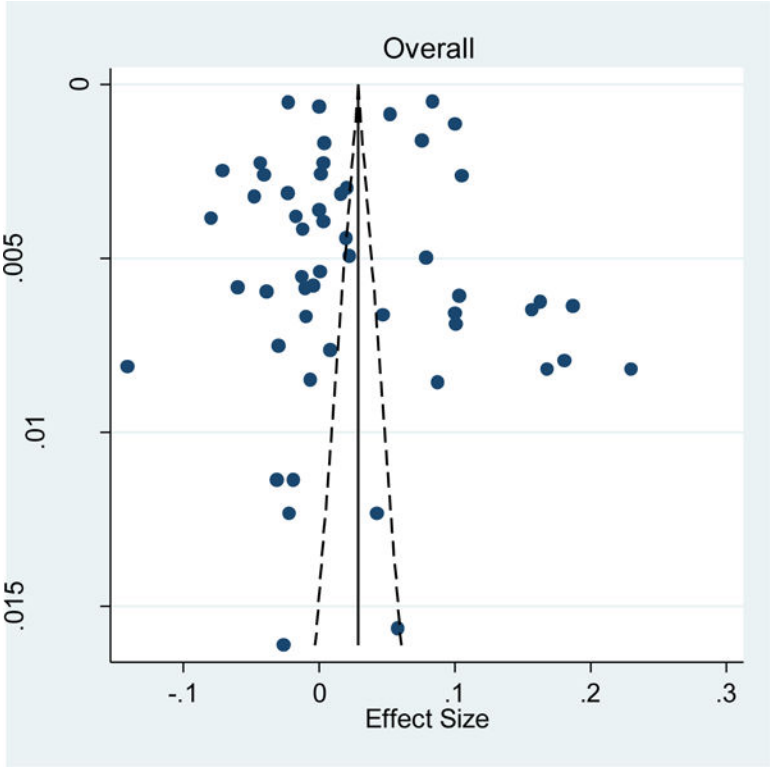

Figure 2.
Funnel plot for the effect sizes for the moderating effect of ethnic/racial identity from studies included in the meta-analysis, excluding outliers.

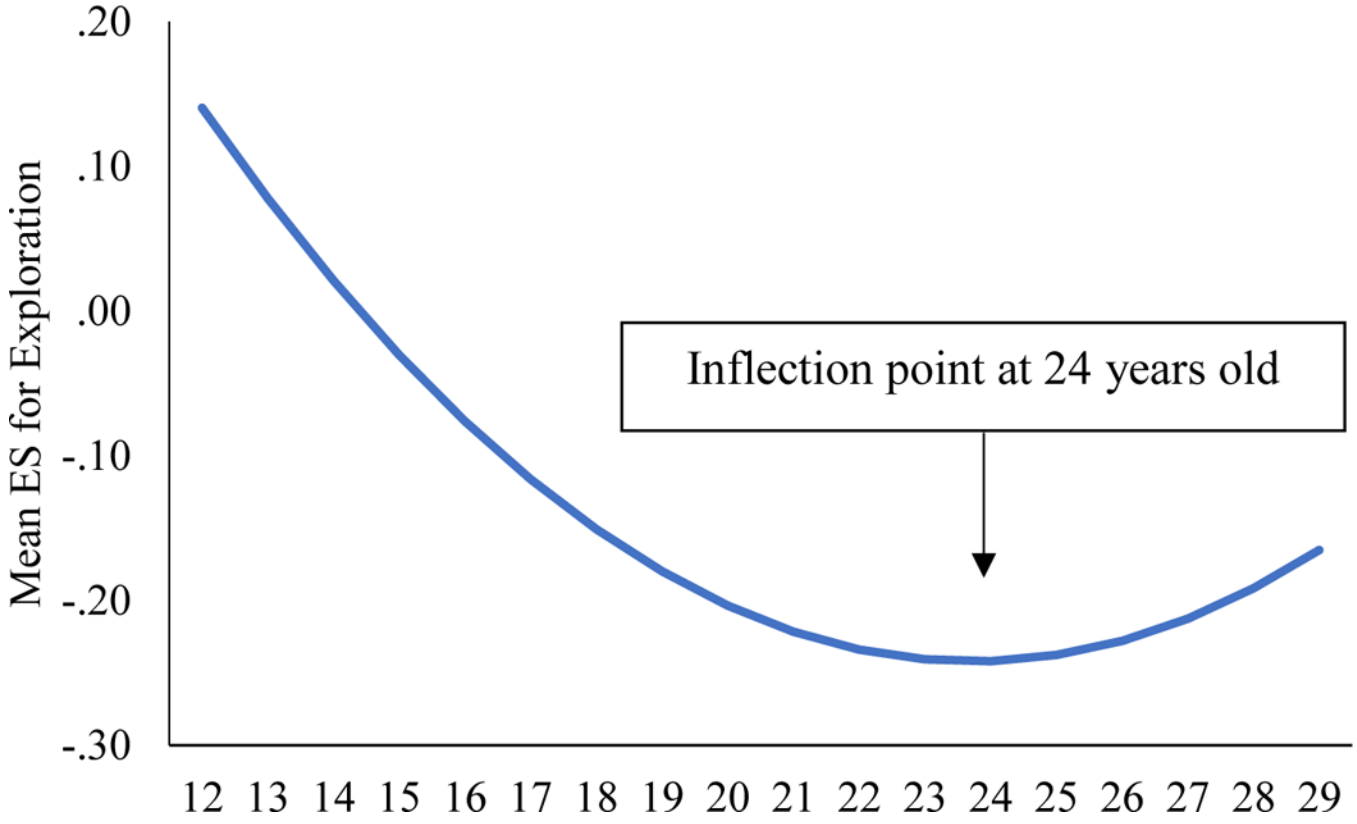

Figure 3.
Effect of age on the effect sizes for the moderating role of ethnic/racial identity exploration, excluding outliers.

Table 1

Theoretical Predictions about the Moderating Impact of Ethnic/Racial identity (ERI) on the Association between Ethnic/Racial Discrimination (ERD) and Adjustment

	Developmental		**Social/Personality**	
	Erikson		**Social Identity Theory (SIT)**	**Self-Categorization Theory (SCT)**
ERI Dimension*	**Exploration Exacerbates**[a]		Centrality Buffers	Centrality Exacerbates
ERI Dimension	**Commitment Buffers**[b]		Private Regard Buffers	Private Regard Exacerbates
ERI Dimension			Public Regard Exacerbates[c]	Public Regard Exacerbates[c]

Note. Bolded hypotheses were supported by findings from the current meta-analysis.

*Overall ERI buffered the negative impact of ERD on mental health, academics/cognition, and physical health. This effect was stronger for Latinx than African- and Asian-heritage individuals. The effect was less evident with older individuals' mental health and in unpublished data.

[a]Prediction supported by study findings. ERI exploration exacerbated the negative impact of ERD on overall adjustment and more specifically, mental health and risky health behaviors. It was most evident when the sample mean age was 24 and less evident with recent publications.

[b]Prediction supported by study findings. ERI commitment buffered the negative impact of ERD on overall adjustment. This effect was stronger for Latinx than Asian-heritage individuals.

[c]The study did not demonstrate an overall main effect of ERI public regard. However, contrary to predictions, a buffering effect emerged that was stronger for Asian-heritage than African-heritage individuals.

Table 2

Study Summaries

Study	N	Age	Sex	Race	Eth	Nat	Design	Pub	ERI	α (ERI)	Adj	α (Adj)	ERD-Adj Corr	ERD-Adj Reg	ERD × ERI
Anglin et al., 2016	632	19.9	F,M	B, A, L, O	-	US, NUS	C	P	EI	-	M	-	−.21	N	.08
Banks, 2004	184	20.0	F,M	B	-	US	C	T	PR, PB, CN, IO	.75, .57, .78, .67–.79	M	.90	−.28	N	−.01
Banks, 2015	65	21.5	F	B	-	US[a]	C	T	PR, CN, IO	.52, .77, .59–.65	M, A	-			−.03
Beiser et al., 2006	642	41.0	F,M	A	C, L, V	NCN	C	P	AC	.72	M	.92		N	−.10
Bourguignon, D.	269	33.0	F,M	B	A	NBG	C	U	AC	.71	M	.75	−.08	N	.00
Bombay et al., 2010	220	35.9	F,M	N	Ab	CN	C	P	SIS	.76–.86	M	.91	−.46	N	.01
Brody et al., 2015	160	18.0	F,M	B	-	US[a]	L	P	RI	.81	P	.90	−.24	N	.19
Burrow et al., 2010	174	31.8	F,M	B	-	US[a]	D	P*	PR, PB, CN	.82, .75, .74	M	.86–.90	−.12	N	−.01
Caldwell et al., 2004	325	20.0	F,M	B	-	US[a]	C	P	PR, PB, CN	.69, .59, .68	B	-	−.20	N	−.02
Chavous et al., 2008	206	14.5	F,M	B	-	US[a]	C	P	CN	.71	A	.65–.78	−.20 (F) .23 (M)	N & P	.02 (F) .08 (M)
Dotterer et al., 2009	148	13.9	F,M	B	-	US[a]	C	P	EI	.80	A	.78	−.22	N	.10
Dulin-Keita et al., 2011	175	9.5	F,M	B, L, W	-	-	C	P	EI	.83	M	.76		N	−.06
French et al., 2010	171	18.9	F,M	L	CA, M, O	US+, NUS	C	P	PR, PB, CN	.78, .73, .82	M	.78–.86	.00	P	−.04
Fuller, 2017	168	20.8	M	B		US[a]	C	P	PR, CN	.70, .71	A	-	.03	N & P	.10
Huynh et al., 2010	601	17.8	F,M	A, L, W	C, E, M, O	US+, NUS	D	P*	PR, CN	.83, .80	M, A, P	.88–.93, -, .84	−.16		.00
Jackson et al., 2012	263	32.0	F,M	O	Mu	US+, NUS	C	P	MII	.65–.81	M	.82–.93	−.24	N & P	−.08
Jackson, 2015	281	19.4	F,M	A	EA, SEA, SAs	US, NUS	C	T	CSES	-	M	-	−.40	N	.00
Jaramillo et al., 2015	129	16.4	F,M	N	-	US[a]	C	P	EI	.88	M	.84	−.23	N	.18
Jones, 2008 [o]	70	15.2	F	N	N	US[a]	L	T	EX	.63	M	.79	−.15		−.27

Study	N	Age	Sex	Race	Eth	Nat	Design	Pub	ERI	α (ERI)	Adj	α (Adj)	ERD-Adj		ERD × ERI
													Corr	Reg	
Khaylis et al., 2007 *o*	91	19.9	F,M	B, A, L, W, O	ME	-	C	P*	EI	.90	M	-		N	−.25
Kim, S. Y.	444	13.0	F,M	A	C	US, NUS	C	U	AC	.80	M, A, B	.60–.87	−.32	N	.00
Lee et al., 2015	136	15.2	F,M	A	K	NUS	C	P	EX, CM *r*	.65–.80	M, B	.73–.74	−.30	N	−.03
Lee, 2003a	91	20.7	F,M	A	-	US, NUS	C	P	EI	.87	M	.86–.93	−.16	N & P	−.03
Lee, 2003b	67	20.7	F,M	A	I	US, NUS	C	P	EI	.87	M	.85–.90	−.49	N	.06
Lee, 2005	84	21.2	F,M	A	K	US, NUS	C	P	CM *r*	.77–.85	M	.91–.93	−.32	N	−.02
Lewin et al., 2011	230	22.0	F	B	-	US[a]	C	P	EI	.83	M	.86	−.28	P	.02
Liang et al., 2008	134	20.2	F,M	A	EA, SAs, SEA, O	US, NUS	C	P	CSES	.77–.90	M, A	.86–.88, .94	−.27	N	.01
Matthews, 2014	243	19.8	F,M	B	J, T	US, NUS	C	T	EI, CRIS	.89, .78–.89	M	.89–.93	−.04		−.01
Mohr, J. J.	121	34.0	F,M	B, A, L, N, O	-	-	C	U	EX, CM	-	M, P	-		N	.06
Mossakowski, 2003	2109	41.6	F,M	A	F	US, NUS+	C	P	EI	.80	M	.90		N	.08
Myrick et al., 2011	120	13.3	F,M	B, A, L, N, O	-	US, NUS	C	P	EI	.87	M	.83	−.45	N	.09
Oppedal, B.	918	19.7	F,M	A	Ag, Ir, S, SL, O	NNO	C	U	EI	-	M	-	−.47	N	.01
Pieterse et al., 2010	340	30.1	F,M	B	Af, Ca	-	C	P	RIAS	.46–.78	M	.89–.93	−.40		.02
Rivas-Drake et al., 2008	84	11.3	F,M	A	C	US+, NUS	C	P	PR, PB	.82, .80	M	.82–.85	−.66	N	.04
Romero et al., 2003	881	12.8	F,M	L	M	US+, NUS	C	P	CM	.95	M	.73	−.13	N	.10
Romero et al., 2014	125	15.5	F,M	L, N, O	M, NA, O	US+, NUS	C	P	EI (stage), AC	-, .88	M	.62	−.10	N	.23
Schaafsma, 2011	320	30.0	F,M	O	Mo, Tu	NE, NNE	C	P	PAS	.88	M	.88	−.11	N	.09
Seaton, 2009	322	16.0	F,M	B	-	US[a]	C	P*	RI (prof)	-	M	.74–.85	−.13	N & P	.02
Sellers et al., 2003	267	18.5	F,M	B	-	US[a]	L	P	PR, PB, CN, IO	.73, .73, .75, .61–.68	M	.87	−.19	N	−.02
Sellers et al., 2006	314	13.8	F,M	B	-	US[a]	C	P	PR, PB, CN	.72, .73, .63	M	.72–.89	−.21	N	−.05
Sibley, C.	18261	-	F,M	A, W, O	As, E, Ma, Pa	-	C	U	-	-	M	-	-.23	N	.01
Smalls et al., 2007	390	8.2	F,M	B		US[a]	C	P	IO	.51–.72	A	.59–.71	−.07	N	.00
Stein et al., 2014	176	15.0	F,M	A	EA, SAs, SEA, O	US+, NUS	C	P*	EX, CM	.75, .93	M	.72–.76	−.38	N	.00

Study	N	Age	Sex	Race	Eth	Nat	Design	Pub	ERI	α (ERI)	Adj	α (Adj)	ERD-Adj		ERD × ERI
													Corr	Reg	
Thomas et al., 2009	1170	15.0	F,M	B	Af, Ca	US[a]+, NUS	C	P	PB, CN	.75, .70	A	-	-.07	N	.05
Torres et al., 2010	91	28.7	F,M	L	CA, M, PR, SA, O	US+, NUS	D	P	EX, CM	.86, .91	M	.87	−.21	N	−.02
Torres et al., 2011	387	31.2	F,M	L	CA, Cu, M, PR, SAs, O	-	C	P	EX, CM	.81, .88	M	.94	−.33	N	−.04
Tovar-Murray et al., 2012	163	23.0	F,M	B	-	US[a]	C	P	EI	.81	A	.82		N	.16
Trask-Tate, 2011	153	14.0	F,M	B	-	US[a]	C	T	PR	.75	A	-	-.08	N	-.01
Tynes et al., 2012	125	16.1	F,M	B	-	US[a]	C	P	EI	.91	M	.68–.83	−.45	N	.17
Umana-Taylor et al., 2012	154	13.0	F,M	L	M	US+, NUS	L	P	AF	.75	A, B	-, .93–.95	−.11	N & P	.05
Unger, J. B.	2020	-	-	-	-	-	C	U	EI		M		−.37	N	−.02
Vera et al., 2011	157	13.5	F,M	B, A, L, N, O	-	-	C	P	EI	.83	M	.78	−.12	N	.16
Wei et al., 2012	383	24.9	F,M	A	C, Ta	NUS	C	P	ESC	.95	M	.89	−.50	N	.11
Williams et al., 2014	256	18	M	B, L	Af, M, PR, O	-	L	P	EX, CM [r]	.80, .82	B	.68–.85	−.18	N & P	.00
Woods, 2006	126	12.7	M	B	-	US	C	T	EI	.88	A	-	.10	P	−.14
Yip et al., 2008	1600	40.1	F,M	A	EA, SAs, SEA, O	US, NUS+	C	P	SI	-	M	.83	−.17	N	.00 (I), −.04 (N)
Yip, T.a	405	15.2	F,M	B, A, L, W, O	DR, EA, PR, SA, O	US+, NUS	C	U	EI, EX, CM, PR, PB, CN	.87, .75, .85, .69, .58, .67	M, A	.77–.84, .86	−.24	N	−.07
Yip, T.b	189	14.3	F,M	B, A, L, W, O	DR, EA, M, PR, SA, O	US+, NUS	C	U	EX, CM, PR, PB, CN	.72, .84, .66, .55, .60	M, A, B, P	.61–.89, .83–.90, .65–.88, .82	−.12	N & P	.00
Yoo et al., 2005	155	20.3	F,M	A	EA, SEA, O	US, NUS	C	P	EI	.87	M	.80–.87	−.17	N	.10

Note. Table included studies conducted outside of the United States. **Sex (Sex/Gender):** F = Female, M = Male. **Race**: B = Blacks, A = Asians, L = Latinx, W = Whites, O = other race/ethnicities. **Eth (Ethnicity/Country of Origin)**: A = African, Ab = Aboriginal/First Nations, Af = African -heritage, Ag = Afghanistani, As = Asian, C = Chinese, Ca = Caribbean, CA = Central American, Cu = Cuban, DR = Dominican, E = European, EA = East Asian, F = Filipino, I = Indian, Ir = Iraqi, J = Jamaican, K = Korean, L = Laotian, M = Mexican, Ma = Maori, ME = Middle Eastern, Mo = Moroccan, Mu = Multiracial/Multi-ethnic, N = Navajo, NA = Native American, O = Other, Pa = Pacific, PR = Puerto Rican, S = Somali, SA = South American, SAs = South Asian, SEA = Southeast Asian, SL = Sri Lankan, T = Trinidadian, Ta = Taiwanese, Tu = Turkish, V = Vietnamese, - = information not reported. **Nat (Nativity Status)**: CN = Canada-born, NBG = Non-Belgium-born, NCN = Non-Canada-born, NE = Netherlands-born, NNE = Non-Netherlands-born, NNO = Non-Norway-born, NUS = non-US-born, US = US-born, US[a] = nativity data were not reported but likely a primarily US-born sample, + = comprises 75% or more of the sample, - = information not reported. **Design (Research Design)**: C = Cross-sectional, L = Longitudinal. **Pub (Publication Type)**: P = Published, T = Thesis, U = Unpublished. P[*] denotes published studies for which we requested information; effect sizes from these studies were considered as unpublished. **ERI (Ethnic/Racial Identity)**: EI = MEIM Ethnic Identity, EX = MEIM Exploration, CM = MEIM Commitment, PR = MIBI Private Regard, PB = MIBI Public Regard, CN = MIBI Centrality, IO = MIBI Ideology, AC = Author constructed, AF = Ethnic Identity Affirmation (Umaña-Taylor et al., 2004), CSES = Collective Self-Esteem Scale (Luthanen & Crocker, 1992), CRIS = Cross Social Attitude Scale (Worrell et al., 2004), EI (stage) = Ethnic identity stages

created based on the MEIM measure, ESC = Ethnic Social Connectedness (Yoon, 2006), MII = Multiracial Identity Integration (Cheng & Lee, 2009), PAS = Psychological Acculturation Scale (Schaafsma et al., 2010), RI = Racial identity based on the MIBI measure, RI (prof) = Racial identity profiles estimated based on the MIBI measure, RIAS = Racial Identity Attitude Scale (Helm & Parham, 1996), SI = Single item on ethnic identity, SIS = Social Identification Scale (Cameron, 2004). **α ERI (Reliability Ethnic/Racial Identity)**. Alphas are reported for each dimension of ERI and adjustment where possible; if ERI or adjustment outcomes included multiple dimensions, the range was reported. - = alpha not reported or not applicable. Alphas for discrimination are not reported. **Adj (adjustment)**: M = Mental Health, A = Academics, B = Behavioral Health, P = Physical Health. **α Adj (Reliability Adjustment)**: ERD-Adj (Ethnic/Racial Discrimination to Adjustment). **Corr (Correlation)**. **Reg (Regression)**: N = discrimination had a negative main effect on adjustment, P = discrimination had a positive main effect on adjustment. **ERD × ERI (the interaction effect between ethnic/racial discrimination and ethnic/racial identity on adjustment)**: F = Females, M = Males, I = Immigrants, N = Natives.

[o] Studies were identified as outliers and excluded in some analyses.

[r] We used the conventional labels of MEIM exploration and commitment even though the studies used different factor structures or labels.

Table 3

Summary of Effect Sizes for the Moderating Role of Ethnic/Racial Identity for the Association between Ethnic/Racial Discrimination and Adjustment Domains without Outliers

	k	*N*	*Mean ES*	95% *CI*	*Z*	*r*	*Q*	I^2
Overall	53	18,545	.027	[.012, .043]	3.53***	.027	42864.18 ***	99.90%
By ERI Dimensions								
Composite (Exp. & Comm.)[a]	17	7,095	.057	[.022, .091]	3.24**	.057	28022.94 ***	99.90%
Exploration[a]	8	1,761	−.062	[−.102, −.021]	−3.00**	−.062	1212.41 ***	99.40%
Commitment[a]	10	2,725	.045	[.003, .087]	2.09*	.045	3403.20 ***	99.70%
Private Regard[b]	13	3,100	.007	[−.040, .055]	.30	.007	6045.34 ***	99.80%
Public Regard[b]	10	3,283	−.043	[−.093, .008]	−1.65	−.043	6236.44 ***	99.90%
Centrality[b]	14	4,443	.002	[−.037, .041]	.10	.002	8631.53 ***	99.80%
By Adjustment Domains								
Mental Health (positive)	20	4,894	.020	[−.015, .055]	1.12	.020	9728.00 ***	99.80%
Mental Health (negative)[c]	32	13,187	.014	[−.006, .034]	1.35	.014	34750.69 ***	99.90%
Academics and Cognition	16	4,720	.028	[.007, .049]	2.57*	.028	3089.58 ***	99.50%
Risky Health Behaviors	6	1,504	−.033	[−.073, .007]	−1.63	−.033	769.55 ***	99.40%
Physical Health	3	950	.098	[.031, .166]	2.86**	.098	374.23 ***	99.50%
By ERI Dimensions and Adjustment Domains								
Mental Health (positive)								
Composite (Exp. & Comm.)[a]	7	1,170	.038	[−.032, .108]	1.07	.038	1378.36 ***	99.60%
Exploration[a]	4	891	.017	[−.052, .087]	.49	.017	607.57 ***	99.50%
Commitment[a]	6	1,856	−.004	[−.075, .068]	.10	−.004	3233.24 ***	99.80%
Private Regard[b]	5	1,574	−.040	[−.117, .037]	−1.02	−.040	3073.30 ***	99.90%
Public Regard[b]	3	908	−.062	[−.147, .023]	−1.43	−.062	947.56 ***	99.80%

	k	*N*	*Mean ES*	95% *CI*	*Z*	*r*	*Q*	I^2
Centrality[b]	5	1,574	.014	[−.053, .080]	−.41	.014	2294.08 ***	99.80%
Mental Health (negative)[c]								
Composite (Exp. & Comm.)[a]	10	6,115	.068	[.024, .112]	3.02**	.068	26440.51 ***	100.00%
Exploration[a]	6	1,384	−.077	[−.129, −.024]	−2.84**	−.077	1184.43 ***	99.60%
Commitment[a]	7	1,467	.042	[−.015, .098]	1.43	.042	1643.62 ***	99.60%
Private Regard[b]	9	2,389	−.024	[−.078, .029]	−.89	−.024	4089.20 ***	99.80%
Public Regard[b]	8	1,788	−.034	[−.080, .013]	−1.43	−.034	1609.92 ***	99.60%
Centrality[b]	8	2,305	−.015	[−.06, .029]	−.68	−.015	2459.00 ***	99.70%
Academics and Cognition								
Composite (Exp. & Comm.)[a]	4	842	.023	[−.091, .137]	.39	.023	1355.64 ***	99.80%
Exploration[a]	2	594						
Commitment[a]	2	594						
Private Regard[b]	6	1,581	.022	[−.061, .106]	.52	.022	3822.48 ***	99.90%
Public Regard[b]	3	1,764	.042	[−.025, .109]	1.24	.042	1209.52 ***	99.80%
Centrality[b]	8	3,008	.012	[−.039, .064]	.47	.012	5684.88 ***	99.90%
Risky Health Behaviors[c]								
Composite (Exp. & Comm.)[a]	0	0						
Exploration[a]	3	581	−.119	[−.182, −.057]	−3.73***	−.119	208.84 ***	99.00%
Commitment[a]	3	581	−.025	[−.212, .162]	−.26	−.025	1852.74 ***	99.90%
Private Regard[b]	2	581						
Public Regard[b]	2	514						
Centrality[b]	2	514						
Physical Health								
Composite (Exp. & Comm.)[a]								

	k	*N*	*Mean ES*	95% *CI*	*Z*	*r*	*Q*	I^2
0	0							
Exploration[a]	1	189						
Commitment[a]	1	189						
Private Regard[b]	2	790						
Public Regard[b]	1	189						
Centrality[b]	2	790						

Note. *k* = number of effect sizes, *N* = sample size, *ES* = effect sizes, *CI* = confidence interval, *Q* = heterogeneity test, I^2 = proportions of variance in effect sizes attributed to heterogeneity. We did not synthesize effect sizes when $k < 3$.

[a] MEIM.

[b] MIBI.

[c] For adjustment in the negative mental health and risky health behavior domains, effect sizes were coded such that higher scores of adjustment indicated lower levels of negative mental health and risky health behaviors.

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Table 4

Publication Bias in Effect Sizes for the Moderating Role of Ethnic/Racial Identity for the Relations between Ethnic/Racial Discrimination and Adjustment Domains

	Unpub vs. Pub ES (Meta Regression)				Asymmetry of Funnel Plot (Egger's Test)		
	Unpub *k*	*B*	*SE*	*T*	*B*	*SE*	*T*
Overall	15	−.065	.021	−3.05**	−1.893	5.092	−.37
By ERI Dimensions							
Composite (Exp. & Comm.)[a]	4	−.121	.044	−2.76*	3.849	12.596	.31
Exploration[a]	4	.136	.040	3.38*	5.447	10.759	.51
Commitment[a]	4	−.083	.040	−2.07	−11.294	9.230	−1.22
Private Regard[b]	7	−.038	.052	−.73	14.578	12.006	1.21
Public Regard[b]	4	.015	.065	.23	−19.594	11.186	−1.75
Centrality[b]	6	−.007	.041	−.17	−22.523	8.934	−2.52*
By Adjustment Domains							
Mental Health (positive)	8	−.057	.036	−1.58	−8.256	8.033	−1.03
Mental Health (negative)	11	−.036	.023	−1.57	−5.631	7.667	−.73
Academics and Cognition	7	−.082	.028	−2.96*	−3.557	5.432	−.65
Risky Health Behaviors	2	−.085	.050	−1.72	−5.303	13.982	−.38
Physical Health	2	−.132	.016	−8.31	12.190	16.695	.73
By ERI Dimensions and Adjustment Domains							
Mental Health (positive)							
Composite (Exp. & Comm.)[a]	1	−.098	.089	−1.10	15.337	9.563	1.60
Exploration[a]	4				25.100	8.590	2.92
Commitment[a]	4	−.066	.053	−1.23	−23.268	12.895	−1.80
Private Regard[b]	4	.004	.113	.04	.736	28.224	.03
Public Regard[b]	2	.122	.122	1.00	43.727	44.961	.97
Centrality[b]	4	−.037	.100	−.37	11.843	23.409	.51

	Unpub vs. Pub ES (Meta Regression)				Asymmetry of Funnel Plot (Egger's Test)		
	Unpub *k*	*B*	*SE*	*T*	*B*	*SE*	*T*
Mental Health (negative)							
Composite (Exp. & Comm.)[a]	3	−.100	.040	−2.52*	5.671	23.409	.24
Exploration[a]	3	.149	.048	3.10*	2.310	14.912	.15
Commitment[a]	3	−.080	.052	−1.55	4.181	13.254	.32
Private Regard[b]	5	−.007	.052	−.14	10.877	15.879	.69
Public Regard[b]	4	.001	.077	.01	25.632	10.452	2.45*
Centrality[b]	5	.020	.052	.38	3.429	16.044	.21
Academics and Cognition							
Composite (Exp. & Comm.)[a]	2	−.218	.063	−3.45	15.452	24.917	.62
Exploration[a]	2						
Commitment[a]	2						
Private Regard[b]	5	−.252	.090	−2.81*	15.127	20.761	.73
Public Regard[b]	2	.042	.086	.49	18.463	29.004	.64
Centrality[b]	4	.006	.062	.09	−21.836	13.527	−1.61
Risky Health Behaviors							
Composite (Exp. & Comm.)[a]	0						
Exploration[a]	1	−.098	.047	−2.09	7.323	32.645	.22
Commitment[a]	1	−.209	.130	−1.61	−61.075	78.739	−.78
Private Regard[b]	1						
Public Regard[b]	1						
Centrality[b]	1						
Physical Health							
Composite (Exp. & Comm.)[a]	0						
Exploration[a]	1						

	Unpub vs. Pub ES (Meta Regression)				Asymmetry of Funnel Plot (Egger's Test)		
	Unpub *k*	*B*	*SE*	*T*	*B*	*SE*	*T*
Commitment[a]	1						
Private Regard[b]	2						
Public Regard[b]	1						
Centrality[b]	2						

Note. Results excluded outliers. Unpub = unpublished, Pub = published, *k* = number of effect sizes, Trim = trimmed, *ES* = effect sizes, *CI* = confidence interval. We did not synthesize effect sizes when k < 3.

[a]MEIM.

[b]MIBI.

[c]For adjustment in negative mental health and risky health behavior domains, effect sizes were coded such that higher scores of adjustment indicated lower levels of negative mental health and risky health behaviors.

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Table 5

Correlations among the Sample and Design Characteristics of the Synthesized Studies

	F	Af	As	L	NA	W	O	Age	Des	Cov	Year	*Counts*	*Mean*	*SD*	*Minimum*	*Maximum*
Sex/gender composition												50				
Females													56%	20	0%	100%
Ethnic/racial composition												50				
African-heritage	−.06											50	44%	47	0%	100%
Asian-heritage	.10	−.60***										50	29%	43	0%	100%
Latinx	.05	−.40**	−.29*									50	18%	33	0%	100%
Native Americans	.18	−.20	.15	−.09								50	2%	14	0%	100%
Whites	−.03	−.16	−.04	.10	−.06							50	2%	6	0%	30%
“Other” ethnicity/race	.12	−.22	−.13	.02	−.04	.03						50	4%	15	0%	100%
Age												50				
Sample mean age	.16	−.14	.17	−.04	.10	−.20	.26					50	19.55	7.36	8.16	41.64
Adolescence												23				
Emerging adulthood												22				
Adulthood												5				
Study design	.08	−.04	−.22	.24	.30	.01	−.12	−.03				51				
Cross-sectional [a]												48				
Longitudinal												3				
Has Covariates	−.29	.22	.05	−.13	−.19	−.19	−.20	−.02	.01			51				
Yes												43				
No												8				
Publication Year	.04	.06	−.26	.13	.12	.03	.12	−.06	−.01	−.05		48	2010	4	2001	2017

Note. Among all the 51 synthesized studies (53 independent effect sizes), only one study did not report sample characteristics. F = Female, AF = African-heritage, As = Asian-heritage, L = Latinx, NA = Native American, W = White, O = Other, Des = Study Design, Cov = Has Covariates.

[a]Studies that include longitudinal components but report the interaction effects between ethnic/racial identity and discrimination for health within the same wave were coded as cross-sectional. Regarding age, adolescence includes samples with participants who were in secondary schools or younger, emerging adulthood includes college samples, and adulthood samples include participants who were beyond college. Ethnic/racial composition was computed as a continuous variable representing the proportion of each ethnic/racial group in each study, therefore all 50 studies were included in all analyses.

Table 6

Meta-regression Results of Variations in the Moderating Effect of Ethnic/Racial Identity for the Association between Ethnic/Racial Discrimination and Adjustment Domains by Sample and Study Characteristics

	Ethnicity/Race						Age						Publication Year	
	LA% vs. AF%		AS% vs. AF%		AS% vs. LA%		Age (L Model)		Age (Q Model)		Age^2 (Q Model)		Year (L Model)	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Overall	.016	.034	−.009	.025	−.024	.035	−.012	.014	.027	.074	−.008	.015	.042	.025
By ERI Dimensions														
Composite (Exp. & Comm.)[a]	.321	.191	−.005	.055	−.333	.199	.025	.033	.162	.152	−.027	.029	.080	.052
Exploration[a]	−.109	.140	−.004	.126	.107	.070	−.006	.044	−1.319	.283 **	.278	.060 **	.244	.088 *
Commitment[a]	.032	.073	−.095	.067	−.128	.032 *	.037	.030	.180	.322	−.031	.069	−.036	.060
Private Regard[b]	−.002	.082	−.112	.085	−.110	.110	.098	.045	.468	.250	−.086	.058	.074	.044
Public Regard[b]	.026	.075	.243	.079 *	.217	.100	−.074	.053	−.570	.314	.114	.071	.068	.085
Centrality[b]	−.051	.079	.194	.442	.248	.447	−.033	.044	−.374	.296	.077	.066	−.032	.044
By Adjustment Domains														
Mental Health (positive)	.138	.049 *	.034	.034	−.102	.050	−.033	.028	.019	.186	−.012	.042	−.002	.045
Mental Health (negative)[c]	−.040	.034	.007	.023	.048	.033	−.010	.014	−.027	.093	.003	.017	.022	.026
Academics	.008	.072	−.019	.056	−.028	.085	.072	.043	−.152	.309	.069	.094	.041	.043
Risky Health Behaviors[c]	.065	.013 *	−.005	.009	−.071	.011 *	.023	.111	−2.498	2.394	.765	.726	−.037	.049
Physical Health	--	--	--	--	--	--	--	--	--	--	--	--	.00	.02

Note. Results excluded outliers. AF = African-heritage, AS = Asian-heritage, LA = Latinx. L Model = Linear Model, Q Model = Quadratic Model. Long = Longitudinal studies, Cross-sec = Cross-sectional studies. Publication year was transformed by subtracting 2000 from the raw scores and dividing them by 10. The quadratic effects of publication year are reported in online supplementary tables. We were unable to examine the effect of ethnicity/race, age, or study design for physical health due to limited number of studies in this domain. We were unable to examine the effect of study design for ethnic identity composite score due to limited number of longitudinal estimates.

[a] MEIM.

[b] MIBI.

[c]For adjustment in negative mental health and risky health behavior domains, effect sizes were coded such that higher scores of adjustment indicated lower levels of negative mental health and risky health behaviors.