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## A Longitudinal Examination of Perceived Discrimination and Depressive Symptoms in Ethnic Minority Youth: The Roles of Attributional Style, Positive Ethnic/Racial Affect, and Emotional Reactivity

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### Abstract

Although perceived ethnic/racial discrimination is well established as a risk factor for depressive symptoms in ethnic minority youth, few studies have examined their longitudinal relationship over time. This study examined whether a negative attributional style, positive ethnic/racial affect, and emotional reactivity moderated the longitudinal relationship of perceived peer or adult discrimination and depressive symptoms in a sample of African American and Latino high school students ( $n = 155$ ). African American and Latino youth who experienced increases in perceived peer discrimination also reported greater depressive symptoms over time, but positive ethnic/racial affect buffered the longitudinal association. Emotional reactivity also served as a significant moderator but only of the baseline association between perceived peer discrimination and depressive symptoms. Thus, perceived ethnic/racial discrimination appears to play a significant role in the development of depressive symptoms for ethnic minority youth, especially those who start high school with lower levels of positive ethnic/racial affect.

### Keywords

discrimination; depressive symptoms; longitudinal trajectories

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Experiences of discrimination pose a psychosocial risk for ethnic minority adolescents in the United States, and this risk is especially pronounced in predicting depressive symptoms in both Latino and African American youth (e.g., Priest et al., 2013). Studies examining the trajectories of depressive symptoms in ethnic minority groups have suggested that discrimination experiences predict increases in depressive symptoms over time (Avenevoli, Knight, Kessler, & Merikangas, 2008; Greene, Way, & Pahl, 2006), but few studies have examined the potential individual factors that may be linked to longitudinal changes in the relation between discrimination and depressive symptoms. To address this limitation in the literature, this study examined the joint trajectories of discrimination and depressive symptoms in a sample of African American and Latino high school students and whether attributional style, positive ethnic/racial affect, and emotional reactivity, served as moderators of that relation. We also sought to clarify the roles of gender, ethnicity, and source of discrimination in these models.

## Theoretical Framework

Theoretical models of the psychological and physical tolls associated with ethnic/racial discrimination experiences posit that individual characteristics place individuals at risk for experiencing the negative ramifications of discrimination (Clark, Anderson, Clark, & Williams, 1999; Harrell, 2000). In Harrell's (2000) multidimensional conceptualization of racism-related stress, these individual factors can be understood in three distinct domains: internal characteristics, sociocultural variables, and affective and behavioral responses. The model posits that individual variability across these domains serves to explain why some individuals come to experience increased negative mental health in response to perceived ethnic/racial discrimination whereas others do not. Building off this model, the current study examines three specific individual factors across these domains of risk by testing whether attributional style (i.e., an internal characteristic), positive ethnic/racial affect (i.e., a sociocultural variable), and emotional reactivity (i.e., an affective response) influenced the development of depressive symptoms in ethnic minority youth, when youth perceived discrimination from peers and/or adults.

## Discrimination and Depressive Symptoms

As suggested by Harrell's (2000) model, perceived ethnic/racial discrimination predicts depressive symptoms concurrently and longitudinally in adolescent samples (e.g., Greene et al., 2006; Zeiders, Umaña-Taylor, & Derlan, 2013). In one of the first studies examining the joint trajectories of perceived ethnic/racial discrimination and depressive symptoms, perceived discrimination predicted growth in depressive symptoms across time in a diverse sample of youth (including African American, Puerto Rican, and Dominican youth; Greene et al., 2006), but other studies have found mixed results in terms of longitudinal effects. Some of these mixed results have been due to examining perceived discrimination at just the initial time point. For example, in a sample of Mexican-origin youth, perceived ethnic/racial discrimination assessed at one time point predicted baseline depressive symptoms but not changes over time (Zeiders et al., 2013). Likewise, in a sample of African American youth, perceived ethnic/racial discrimination was associated with baseline psychological

functioning but not to changes in functioning over time (Seaton, Neblett, Upton, Hammond, & Sellers, 2011). Reliance on time-invariant reports of discrimination often yields counterintuitive findings (e.g., that high levels of perceived discrimination are associated with higher baseline depression scores, but also no or negative associations with changes) because participants are likely to regress toward the mean over time, suggesting that those higher at baseline (who also might report more discrimination) have greater ability to drop in subsequent assessments of their depression. Therefore, more research is needed to clarify how longitudinal changes in perceived ethnic/racial discrimination predict depressive symptom trajectories.

Other discrepant findings may be in part due to differences in the age ranges of the participants in these studies. For example, two studies examining the time varying effects of perceived ethnic/racial discrimination on depressive symptoms found a positive relation in high school-aged youth and young adults (Estrada-Martínez, Caldwell, Bauermeister, & Zimmerman, 2012; Greene et al., 2006). However, this finding was not replicated in the only other study examining time-varying effects of perceived ethnic/racial discrimination on depressive symptoms as children entered adolescence (the study examined youth starting in fifth grade and ended when they were in 10th grade; Brody et al., 2006). It may be that the effects of ethnic/racial discrimination over time become more-powerful predictors as youth get closer to adulthood. Cognitive changes associated with adolescence, such as greater abstract reasoning (Yurgelun-Todd, 2007) coupled with an increased understanding of systemic oppression (Fisher, Wallace, & Fenton, 2000), may interact to lead ethnic minority youth to interpret experiences of discrimination as limiting their potential selfactualization (Hammack, 2003). This interpretation may then lead to increases in depressive symptoms as youth continue to have these negative interpersonal experiences and start to reach young adulthood. Thus, the current study extends these findings by examining the joint trajectories in the high school period, which may be the especially sensitive period as youth are nearing adulthood.

## Attributional Style

In the multidimensional model, Harrell (2000) proposed that attributions likely play a central role in understanding the negative impact of discrimination. At the same time, attributional style has been implicated in the development of depressive symptoms for youth in the face of stress (Jacobs, Reinecke, Gollan, & Kane, 2008). Yet, despite the fact that attributions are hypothesized to predict the effects of discrimination and the development of depressive symptoms, few studies have examined their role in moderating the relation of discrimination and depressive symptoms in adolescent samples. A negative attributional style, defined as whether individuals attribute stressful events to internal, stable, and global factors, has been found to lead longitudinally to depressive symptoms in the context of stressful events (Bohon, Stice, Burton, Fudell, & Nolen-Hoeksema, 2008). It is hypothesized that in the face of discrimination, a negative attributional style would lead to attributions that discrimination is pervasive and can influence all aspects of their lives. Only one past study has examined this specific question using a cross-sectional design and found that attributional style did not serve as a moderator between experiences of discrimination and depressive symptoms in a sample of Latino youth (Stein, Gonzalez, & Huq, 2012), but this question has not been

examined longitudinally. Given that attributional style becomes more stable in adolescence (Cole et al., 2008), longitudinal work at this time may shed light on its role in the development of depressive symptoms in ethnic minority youth and whether it serves as a risk factor for youth who perceive discrimination.

### Positive Ethnic/Racial Affect

Harrell's (2000) model also proposes that sociocultural factors influence how one reacts to discriminatory experiences and that ethnic identity in particular may be especially protective. Consistently, ethnic/racial identity has received significant attention as serving a protective role in the lives of ethnic minority youth, especially as a buffer against experiences of discrimination (i.e., Shelton et al., 2005). Recent scholarship has suggested that the positive ethnic/racial affect (i.e., own evaluations and affect toward group) is the aspect of ethnic identity that is the most relevant to mental health outcomes such as depressive symptoms (Rivas-Drake et al., 2014) and, in particular, as a buffer to the effects of ethnic/racial discrimination (Shelton et al., 2005). Positive ethnic/racial affect has been measured in prior work as private regard, affirmation, and ethnic commitment (Rivas-Drake et al., 2014).

Studies examining positive ethnic/racial affect as a moderator of the relation between perceived ethnic/racial discrimination and depressive symptoms have yielded mixed results. For example, positive ethnic/racial affect did not moderate the relationship between discrimination and depressive symptoms in a multiethnic 12th grade sample (Huynh & Fuligni, 2010). However, in a sample of multiethnic immigrant 9th–12th graders, positive ethnic/racial affect buffered the effects of discrimination from adults in school to depressive symptoms (Tummala-Narra & Claudius, 2013). Only one past study has examined this question in a longitudinal framework finding that positive ethnic/racial affect did not buffer against discrimination in predicting trajectories of depressive symptoms in high school students (Greene et al., 2006). The lack of consistent findings in the literature suggest that more research is needed to test the theoretically proposed protective effect of positive ethnic/racial affect in the face of discrimination. In particular, most studies examining this question have been conducted in large metropolitan areas with significant diversity (e.g., New York, Los Angeles), and this question has not been examined longitudinally in a rural context. Given the strong theoretical rationale and the lack of extensive longitudinal work, this study aimed to understand whether positive ethnic/racial affect operates as a protective factor in the longitudinal relationship between discrimination and depressive symptoms.

### Emotional Reactivity

Harrell's (2000) multidimensional model also posits that individual differences in affective reactions (e.g., anger, sadness) to stress can influence the effects of discrimination on mental health outcomes. Building off this model, emotional reactivity, an individual's tendency to react to stressful events with negative affect, may be critical in linking experiences of perceived ethnic/racial discrimination to depressive symptoms. Emotional reactivity is an individual characteristic that "refers to the extent to which an individual experiences emotions (a) in response to a wide array of stimuli (i.e., emotion sensitivity), (b) strongly or

intensely (i.e., emotion intensity), and (c) for a prolonged period of time before returning to baseline level of arousal (i.e., emotion persistence)” (Nock, Wedig, Holmberg, & Hooley, 2008, p. 107). Emotionally reactive adolescents may be more impacted by discriminatory experiences because their initial emotional reactions will be heightened and their emotional responses will be prolonged.

No past work has specifically examined this precise question, but other research has provided support for the notion that emotional reactivity may play a unique role in the link between perceived ethnic/racial discrimination and depressive symptomatology. For example, in a sample of African American adolescents, the effects of experiences of perceived racial discrimination on internalizing symptoms were completely mediated by trait anger (Nyborg & Curry, 2003). Similarly, angry rumination partially mediated the effects of discrimination on depressive symptoms in a sample of ethnic minority college students (Borders & Liang, 2011). Although experiencing anger and negative affect in the face of discrimination is normative (Swim, Hyers, Cohen, Fitzgerald, & Bylsma, 2003), those individuals whose emotional responses are magnified by greater reactivity are likely at higher risk to experience the negative effects of ethnic/racial discrimination. Thus, this study makes an important extension to past work by examining whether emotional reactivity serves as a risk factor in the longitudinal relationship between perceived ethnic/racial discrimination and depressive symptoms.

## Source of Discrimination

To best understand the impact of discrimination in adolescence, it is critical to unpack the effects of discrimination from adults versus peers. First, adults and peers may differentially exhibit discrimination. Adults may be more likely to practice covert or subtle forms of exclusion or bias, especially within the school context. For example, in a sample of multiethnic 9th–12th graders, African American and Latino youth reported high levels of this type of discrimination (Fisher et al., 2000). About 50% of those surveyed reported receiving a lower grade in school than they deserved (compared to 25% of non-Latino White students), about 30% reported being wrongly disciplined (compared to 8% of non-Latino White students), and about 25% were discouraged from joining an advanced class (compared to 5% of non-Latino White students). A few studies have also documented that African American and Latino youth are more likely to report discrimination from adults inside and outside of school compared to other ethnic minority and non-Latino White youth (e.g., Greene et al., 2006; Huynh & Fuligni, 2010). On the other hand, peers may be more likely to practice both covert and overt forms of discrimination. In the same study, 30%–50% of Latino and African American youth reported being called insulting names due to race and ethnicity by their peers, and similar percentages also reported being excluded from activities by their peers (Fisher et al., 2000). In addition, peer discrimination experiences may be more frequent due to the larger number of peers in school and the increased number of experiences (i.e., both covert and overt), which has been found to be the case in a multiethnic sample (Tummala-Narra & Claudius, 2013).

Second, the effects of discrimination could also vary by source. In terms of adult discrimination, youth may be more likely to internalize these experiences as limited future

potential, and it may impact school functioning (Benner & Graham, 2013). On the other hand, at this point in development, adolescents are particularly susceptible to peer feedback and socialization (Gould & Mazzeo, 1982; McElhaney, Allen, Stephenson, & Hare, 2009). If these negative peer experiences are more frequent, they may also be more harmful. Research has seemed to point to experiences of peer discrimination as more negatively impacting ethnic minority youth mental health outcomes when compared to experiences of discrimination from adults. Although high levels of positive ethnic/racial affect have been found to buffer adult discrimination in predicting depressive symptoms, peer discrimination was not buffered by positive ethnic/racial affect (Tummala-Narra & Claudius, 2013). Similarly, across two studies of multiethnic youth, compared to adult discrimination, peer discrimination more uniformly predicted negative outcomes (Greene et al., 2006) and worse mental health (Benner & Graham, 2013). However, not all studies have found differential effects of adult versus peer discrimination across outcomes (e.g., Huyhn & Fuligni, 2010). The examination of the individual moderators in the current study could further clarify the relation between different sources of discrimination and the factors that put youth at risk for these symptoms.

## Demographic Considerations

Models of the psychological and physiological effects of discrimination also hypothesize that demographic characteristics, such as ethnicity and gender, influence experiences of discrimination (Clark et al., 1999; Harrell, 2000). Ethnicity is associated with both experiences of discrimination and depressive symptoms. For example, African American youth are more likely to experience increases in adult discrimination in the high school period compared to Latino youth (Greene et al., 2006). On the other hand, Latinos experience a greater risk for baseline depressive symptoms compared to either non-Latino White or African American adolescents (Adkins, Wang, Dupre, van den Oord, & Elder, 2009; Brown, Meadows, & Elder, 2007), but this increased risk is not evident in the longitudinal trajectories. In fact, African American adolescents demonstrate greater risk longitudinally compared to other ethnic groups (Wickrama & Vazsonyi, 2011).

Similarly, gender also influences both experiences of discrimination and depressive symptoms. Whereas ethnic minority girls demonstrate risk for greater depressive symptomology at baseline, ethnic minority boys appear to have riskier longitudinal trajectories (Estrada-Martínez et al., 2012; Zeiders et al., 2013), yet this finding has been documented in only a few studies, and more studies examining longitudinal risk for depressive symptoms in ethnic minority youth are necessary. In terms of experiences of discrimination, some studies find that Latino and African American boys are more likely to experience discrimination compared to girls (Seaton, Caldwell, Sellers, & Jackson, 2008; Umaña-Taylor & Updegraff, 2007). Given that Latino and African American youth may differentially experience discrimination as noted earlier, the current study examined how gender and ethnicity influenced the relation between perceived ethnic/racial discrimination and depressive symptoms.



## Present Study

In the present study, the following hypotheses guided our examination of the longitudinal trajectories of depressive symptoms in African American and Latino youth across the high school period:

*Hypothesis 1:* Perceived ethnic/racial discrimination from both peers and adults predicts greater concurrent depressive symptoms.

*Hypothesis 2:* Changes over time in perceived ethnic/racial discrimination from both peers and adults is associated with changes over time in depressive symptoms.

*Hypothesis 3:* Attributional style, positive ethnic/racial affect, and emotional reactivity serve as moderators of the relationship between ethnic/racial discrimination and depressive symptoms concurrently and longitudinally. Positive ethnic/racial affect buffers the adverse association between these two factors, whereas a more-negative attributional style and greater emotional reactivity exacerbate the association between discrimination and depression concurrently and over time.

Given that there has been limited past research concerning whether gender or ethnicity influences the concurrent or longitudinal relationship between perceived ethnic/racial discrimination and depressive symptoms, we did not make specific hypotheses about these issues. However, we did examine them.

## Method

### Participants

The sample in the current study is from a subsample of a larger study examining peer processes and health risk behaviors in a diverse sample of youth from a rural, lower income community in the Southeast ( $n = 399$ ; 49.2% White, 22.7% African American, 19.3% Latino American, 8.0% Asian American, 0.1% Native American). Given our interest in perceived ethnic/racial discrimination in ethnic minority youth and their experiences of depressive symptoms, the current analyses included only those adolescents who identified themselves as African American or Latino. The sample of other ethnic minority adolescents was too small to examine ethnic/racial differences. We also limited the sample to those who had complete data at Time 1 (T1) on all the variables of interest ( $n = 18$  African American and Latino adolescents missed Day 2 of data collection at T1). Thus, the final sample included 155 adolescents (46.0% Latino/a, 50.3% girls;  $M_{\text{age}} = 14.98$  years,  $SD = 0.64$ ). The Latino participants varied in terms of country of origin, with the majority of the sample coming from Mexico (59.7%), with small percentages from other countries (Honduras, 6.9%; El Salvador, 6.9%; Puerto Rico, 4.1%; Guatemala, 2.7%) or from mixed Latino backgrounds (5.5%); 14.2% did not report their country of origin. About half of the Latino sample (46.8%) was born outside of the United States, and although the data were not collected for the sample, the majority of Latino parents in the community are immigrant and the area is considered an emerging immigrant community. Although we also did not collect data on the socioeconomic status of the adolescents in our sample, the school district where this study was conducted has a high percentage of students eligible for free or reduced-price lunch

(approximately 67%). The annual income for a household of four would have to be at or below \$29,965 to qualify for a free lunch or at or below \$42,643 to qualify for a reduced-price lunch. Thus, the district where the research was conducted can be described as low income.

## Procedure

Letters describing the study and parental consent forms were sent home to all ninth grade students in the school district ( $n = 712$ ), with the exception of adolescents in self-contained special education classes (see Guan, Fox, & Prinstein, 2012, for additional details). Recruitment involved a description of a study regarding “peer relationships and adjustment,” with no mention of ethnicity. Various adolescent-, teacher-, and school-based incentives were used to ensure the return of the consent forms, which gave parents the option to deny or grant consent. Adolescents also had the right to deny consent. Consent forms were returned by 75% of the invited families, and of those, 80% of the parents gave consent for their child’s participation ( $n = 423$ ). Consent form return rates and consent rates were not significantly different across ethnic groups. Data were unavailable for 27 participants, and thus, for Time 1, 399 adolescents provided complete data.

Measures were completed in the school’s auditorium or cafeteria in the spring of ninth grade and then every 6 months for a total of seven time points (until the spring of 12th grade). Retention varied between 90% and 99% between adjacent time points. Retention between Times 1 and 7 was 67% and did not vary significantly by race/ethnicity. This is typical for longitudinal studies conducted across a 4-year time span and for a low-income sample (Eccles, 1997; Greene et al., 2006; Seidman, 1991). The current analyses use data from only Time 1, Time 4, and Time 6 for which there was data on ethnic/racial discrimination. All variables in this study were uncorrelated with missingness at Time 4 and Time 6, suggesting that these data were missing at random and that the default missing data strategy in Mplus (full-information maximum likelihood [FIML]) was appropriate. FIML computes parameter estimates using all available data but does exclude cases that were missing on exogenous predictor variables. Analyses revealed that missing data at subsequent time points was not related to any of the variables at Time 1, including perceived ethnic/racial discrimination. Results reported in the following sections were based on a sample of 155 respondents.

## Measures

**Depressive symptoms**—Depressive symptoms were assessed using the Mood and Feelings Questionnaire (MFQ; Costello & Angold, 1988), a 33-item self-report measure designed to assess criteria for depression in children and adolescents ages 8–18 on the basis of criteria for major depressive disorder according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994). The measure has demonstrated adequate reliability and validity (Costello & Angold, 1988). It has been used with African American and Latino samples in the past and has been shown to be equivalent across ethnic groups (Banh et al., 2012). MFQ items include statements such as “I felt miserable or unhappy,” “I cried a lot,” and “I thought bad things would happen to me.” Each item is scored on a 3-point scale (0 = *mostly true*, 1 = *sometimes true*, 2 = *not true*) for the individual over the past 2 weeks. Higher scores are indicative of higher levels of depressive



symptoms. In the present study, internal consistency was excellent across time points (African American  $\alpha$ s = .93–.94; Latino  $\alpha$ s = .92–.96). The items were averaged at each time point.

**Perceived ethnic/racial discrimination**—The 42-item Adult and Peer Discrimination Scale (Way, 1997) was used to assess perceived unfair, biased, or discriminatory treatment by adults and peers in schools. The Adult and Peer Discrimination Scale was developed using qualitative interviews with over 300 African American, Latino, and Asian American adolescents, including high school students (as cited in Pahl & Way, 2006), and has demonstrated adequate reliability and validity (Greene et al., 2006; Pahl & Way, 2006). Participants were asked to rate the frequency of each type of discriminatory behavior on a 5-point scale ranging from 1 (*never*) to 5 (*all the time*) separately for adults in school and peers in school (21 items for each). Sample items include “How often do you feel that other students in your school treat you as a troublemaker because of your race or ethnicity?” and “How often do you feel that other adults in your school pick on you because of your race or ethnicity?” As in previous research, this scale was dichotomized to represent whether the adolescent experienced the specific discriminatory event and to account for low level of endorsement at the higher frequency (Greene et al., 2006). As in past research, a sum score (range = 0–21) was calculated for each scale to represent the total number of discriminatory events from each source (mean range of peer discrimination = 4.91–5.49; mean range of adult discrimination = 5.01–5.25). The scale demonstrated excellent reliability in the current sample across time points and reporter (African American peer  $\alpha$ s = .93–.96; Latino peer  $\alpha$ s = .91–.96; African American adult  $\alpha$ s = .95–.96; Latino adult  $\alpha$ s = .91–.96).

**Attributional style**—A shortened three-vignette version of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002) was used to assess negative attributional style for interpersonal events. The shortened version was developed for this study because of our focus on interpersonal stress. This scale has been used in the past with Latinos and African Americans to predict depressive symptoms (e.g., Cole et al., 2008; Guan et al., 2012) and has demonstrated adequate validity and reliability (Hankin, 2008; Hankin & Abramson, 2002). Adolescents were presented with three negative hypothetical vignettes (e.g., “You want to go to a big party but nobody invites you”). Then, adolescents were asked to rate on a 7-point scale the degree to which they endorsed negative attributions relating to the event (e.g., “Were you not invited because of something about you or because of something else?”; “Do you think the reason you weren’t invited to the party will also cause you to not be invited to parties in the future?”; “Do you think other bad things will happen to you because you weren’t invited to the party?”). This shortened measure had a total of 18 items (six items per vignette). This measure has shown adequate psychometric properties (Hankin & Abramson, 2002) and demonstrated good internal consistency in this sample (African American  $\alpha$  = .93; Latino  $\alpha$  = .89). This measure was assessed only at Time 1, and an average score was calculated for each participant. Higher scores were indicative of a more-negative attributional style.

**Positive ethnic/racial affect**—The three-item commitment subscale of the shortened Multigroup Ethnic Identity Measure-Revised (Phinney & Ong, 2007; Phinney &

Baldelomar, 2006; Rivas-Drake et al., 2014), which was piloted with multiple ethnic groups including Latinos and African Americans, was used to measure positive ethnic/racial affect. Adolescents rated their level of ethnic commitment on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Items included “I have a strong sense of belonging to my own ethnic group,” “I feel a strong attachment towards my own ethnic group,” and “I understand pretty well what my ethnic group membership means to me.” In the present study, internal consistency was good (African American  $\alpha = .77$ , Latino  $\alpha = .83$ ). These items were assessed only at Time 1 and were averaged to represent level of ethnic commitment.

**Emotional reactivity**—The 21-item Emotional Reactivity Scale (Nock et al., 2008) was used to assess emotional sensitivity, intensity, and persistence. Adolescents were asked to recall how they experienced emotions each day and rate the descriptors on a 5-point scale ranging from 0 (*not at all like me*) to 4 (*completely like me*). Sample items are “I experience emotions very strongly,” “When something bad happens, my mood changes very quickly. People tell me I have a very short fuse,” and “When something happens that upsets me, it’s all I can think about for a long time.” The measure, which has shown good psychometric properties and reliability and is best characterized as a unidimensional construct (Nock et al., 2008), has been used with ethnic minority participants (Kleiman, Ammerman, Look, Berman, & McCloskey, 2014). Although it has not been used extensively with Latino and African youth, it demonstrated excellent reliability in the current sample (African American  $\alpha = .95$ , Latino  $\alpha = .94$ ). Moreover, validity in the current study was established because it is significantly related to depressive symptoms ( $r = .59, p < .001$ ) but was uncorrelated with ethnic/racial affect ( $r = .08$ ). This measure was completed only at Time 1, and the average score was used to assess total emotional reactivity.

## Results

All analyses were conducted via latent growth curve modeling using Mplus Version 7.3 (Muthén & Muthén, 1998–2015). Correlations are presented in Table 1. The first model specified two latent factors representing the intercept (baseline) and slope (change over time) for depressive symptoms and two latent factors representing the intercept and slope for the discrimination factors. Models were tested separately by source of discrimination (i.e., from peers and from adults). Significant associations between the discrimination intercept factor and the depressive symptoms factor would indicate a concurrent association at baseline, whereas a slope-to-slope association would indicate a parallel process in which changes in discrimination over time would be associated with significant changes in depressive symptoms. Ethnicity, gender, positive ethnic/racial affect, attributional style, and emotional reactivity were included as predictors of depressive symptoms as well (see Figure 1). To account for associations between discrimination factors and the predictors, paths were also specified from each predictor to both the discrimination intercept and the discrimination slope. All continuous predictor variables (positive ethnic/racial affect, emotional reactivity, and attributional style) were centered prior to their inclusion in the analyses.

Prior to evaluating the first hypothesis, we estimated an unconditional growth model representing depressive symptoms. This model demonstrated a good fit to the data,  $\chi^2(2) =$

3.47,  $p = .18$ , comparative fit index (CFI) = .99, root-mean-square error of approximation (RMSEA) = .07 (note one residual variance needed to be constrained) and suggested that the slope for depressive symptoms was negative and statistically significant (respondents' scores declined .03 points, or .30 standard deviations, across each wave on average). Moreover, the variances of both the intercept and slope factors were significant, suggesting that sufficient variability in the sample existed to consider predictors of differences in both initial levels and rate of change over time.

The main effects model included the two discrimination latent factors (intercept and slope) and the predictor variables. Model fit was good for both the discrimination-from-peers model,  $\chi^2(20) = 19.63$ ,  $p = .48$ , CFI = 1.00, RMSEA = .00, and the discrimination-from-adults model,  $\chi^2(20) = 33.55$ ,  $p = .02$ , CFI = .96, RMSEA = .06. The first hypothesis proposed that there would be concurrent associations between reports of discrimination and adolescent depressive symptoms. This hypothesis was supported in both models, because we found positive associations between intercept latent factors representing baseline peer discrimination and depressive symptoms as well as adult discrimination and depressive symptoms (see coefficients in Table 2). In both models, Latino adolescents and those reporting higher emotional reactivity also tended to report greater depressive symptoms. Gender and positive ethnic/racial affect were unrelated to baseline depressive symptoms, whereas attributional style was related but only in models that included adult discrimination (this coefficient was comparable but did not meet the criteria for statistical significance in the discrimination-from-peers model).

The second hypothesis proposed that changes in discrimination over time would be associated with changes in depressive symptoms over time. This hypothesis was partially supported because there was a statistically significant association indicating that increased reports of discrimination from peers were positively associated with depressive symptom slopes. This same association, however, was nonsignificant in the discrimination-from-adults model. Such findings suggest that the overall average decline in depressive symptoms over time is less negative (the drop is less pronounced) and even becomes positive for adolescents with greater increase in reports of discrimination over time from peers (see Figure 2). No other covariates were associated with depression slopes in either the discrimination-from-peers or the discrimination-from-adults model.

The next set of analyses evaluated the third hypothesis—suggesting that concurrent and over-time associations between discrimination and depressive symptoms would be moderated by positive ethnic/racial affect, emotional reactivity, and attributional style—as well these associations in relation to ethnicity and gender (coded 0 = girls; 1 = boys).

In Mplus, interactions that involve latent factors (e.g., the discrimination intercept and slope factors) are accomplished via the *xwith* command, resulting in six product terms, one each representing the intercept factor moderated by each putative moderator variable, and one each representing the slope factor moderated by each putative moderator. Statistically significant coefficients linking these interactions to the outcome (baseline depressive symptoms and change in depressive symptoms) indicate that there is a moderator effect. We first examined gender and ethnicity interactions in both the discrimination-from-peers model

and the discrimination-from-adults model. Results suggested no significant interactions involving gender or ethnicity. These findings suggested that the associations between discrimination (regardless of source and whether concurrent or over time) were comparable across males/females and African Americans/Latinos.

The substantive interaction terms were included in one model (but separated by source of discrimination). In the discrimination-from-peers model, there were two statistically significant interactions linking baseline discrimination to baseline depression. A Positive Discrimination  $\times$  Emotional Reactivity interaction ( $B = .16, p = .03$ ) suggested that the association between baseline discrimination by peers and depressive symptoms was stronger among those higher in emotional reactivity (see Figure 3). A negative interaction between baseline discrimination and positive ethnic/racial affect was marginally significant ( $B = -.14, p = .09$ ) and suggested that positive associations between baseline discrimination and baseline depressive symptoms were weaker among adolescents reporting greater positive ethnic/racial affect. There were no statistically significant interactions in the discrimination-from-adults model involving concurrent associations.

In both the discrimination-from-peers ( $B = -.43, p = .03$ ) and discrimination-from-adults ( $B = -.51, p = .01$ ) models, there was a significant interaction between the discrimination slope factor and positive ethnic/racial affect in predicting changes over time in depressive symptoms. This negative interaction effect suggested that the association linking increases in the depressive symptoms slope to increases in discrimination over time are lowered at increasing levels of positive ethnic/racial affect. Put another way, positive feelings toward one's ethnicity mitigated the association between increased discrimination and increasing depression over time (see Figure 4; note the interaction is presented for only the discrimination-from-peers model; the nature of the interaction in the discrimination-from-adults model was similar).

## Discussion

The current study extends our understanding of the concurrent and longitudinal associations between depressive symptoms and perceived ethnic/racial discrimination by exploring potential moderators suggested by the multidimensional model proposed by Harrell (2000). Overall, perceived ethnic/racial discrimination from both peers and adults in the school context was associated with greater baseline depressive symptoms, as we hypothesized. The only significant moderator of the concurrent association was emotional reactivity, such that youth with greater emotional reactivity demonstrated greater depressive symptoms when faced with peer discrimination compared to those with lower levels of reactivity. In terms of longitudinal relationships, for perceived ethnic/racial discrimination from both peers and adults in school, there was a longitudinal association that was mitigated primarily by positive ethnic/racial affect. Thus, our findings suggest that moderators of the relationship between perceived ethnic/racial discrimination and depressive symptoms differ for concurrent versus longitudinal relationships.

### Concurrent Relationships

As hypothesized, ethnic/racial discrimination served as a risk factor in predicting baseline depressive symptoms when Latino and African American youth experienced discrimination from peers and adults. This finding is in line with multiple past studies documenting this link (e.g., Pascoe & Smart Richman, 2009; Schulz et al., 2006; Umaña-Taylor & Updegraff, 2007), but our study extends this past work by finding that emotional reactivity moderates this relationship for peer discrimination. This is the first study to our knowledge to link emotional reactivity to depressive symptomology for ethnic minority youth experiencing discrimination. Although negative affect in the face of discrimination is expected, the tendency to experience negative emotions intensely and for an extended period of time places these youth at risk to experience greater negative ramifications of discrimination. According to Harrell (2000), individual differences in the affective response to racism likely influences the coping mechanisms enacted by the individual and also helps determine the effects of the discriminatory experience. Although our study did not measure coping, our findings provide support for the idea that emotional reactivity to stressors in general constitute an individual risk factor for the negative ramifications of discrimination. Because this moderation was evident only in the baseline association, it suggests that emotion reactivity influences the initial level of effects that are likely maintained across time, but initial levels of emotional reactivity do not account for changes in that relationship. Future research should continue to examine the relationship between individual differences in affective responses to discrimination because it suggests that bolstering emotion regulation skills may be an important avenue for prevention programs for ethnic minority youth.

### Longitudinal Relationships

Increases in peer discrimination over time were associated with greater depressive symptoms, suggesting that youth who experience increases in peer discrimination are at continued risk for maladaptive functioning. These findings are consistent with past work documenting the longitudinal effects of ethnic/racial discrimination (e.g., Greene et al., 2006). Given that the current study was able to model change in discrimination over time, it suggests that changes in peer discrimination in the high school period are particularly problematic in their prediction of depressive symptoms. This finding is consistent with past work finding that peer interpersonal stressors influence the development of depressive symptoms (Prinstein & Giletta, in press).

Consistent with Harrell's (2000) model, individual factors present at the start of high school placed certain youth at risk for the deleterious effects of perceived ethnic/racial discrimination from peers and adults. As hypothesized, positive ethnic/racial affect at the start of high school served as a moderator of the longitudinal relationship between perceived ethnic/racial discrimination and depressive symptoms. Armed with strong positive feelings toward their group, these youth demonstrated more-resilient depressive trajectories because they can draw on their group identification as a source of strength and support (Tajfel & Forgas, 2000). Our findings differ from one past study examining this longitudinal relationship, which may be due to the different contexts in which these studies were conducted (rural Southeast vs. New York City; Greene et al., 2006). Positive ethnic/racial affect may be more protective in less-multiethnic contexts, where African Americans and

Latinos constitute smaller portions of the population compared to non-Latino Whites and where there is a history steeped in discrimination. Indeed, a recent review of the impact of ethnic identity concluded that researchers need to pay more attention to contextual factors in order to understand discrepant findings in this literature (Rivas-Drake et al., 2014). Future research should continue to explore the specific contextual factors that lead ethnic/racial affect to serve this protective role in terms of depressive symptoms.

Contrary to our hypotheses, attributional style did not moderate the relationship between discrimination and depressive symptoms longitudinally. This finding is consistent with past cross-sectional work examining this question in a sample of Latino adolescents (Stein et al., 2012). Although this measure of attributional style is widely used in the literature examining cognitive risk for depressive symptoms (e.g., Auerbach, Ho, & Kim, 2014), it does not measure attributions specific to discrimination and instead focuses on general interpersonal stressors. It may be that the cognitive risk factors for detrimental effects of discrimination are more linked to specific experiences of discrimination. For example, race-based rejection sensitivity has been found to be a specific cognitive risk factor for African American college students (Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002). In addition, it may be that certain types of attributions are more critical. For example, global attributions about the stability and pervasiveness of discrimination (e.g., this will happen again) may be more critical to predicting depressive symptoms than internal attributions (e.g., this is my fault). Consistent with this notion, pervasive and severe attributions to discrimination were associated with lower self-esteem among Latino college students, but whether the event was viewed as controllable by the individual was unrelated to self-esteem (Eccleston & Major, 2006). The majority of work examining attributions to discriminatory events has been conducted in college samples. Future studies need to examine this question earlier in development, because these attributions likely play a role in the effects of discrimination, particularly in how adolescents learn to cope and deal with these experiences.

### **Peer Versus Adult Discrimination**

The source of discrimination did show a slightly different pattern of results across analyses. Although positive ethnic/racial affect moderated the longitudinal relationship between discrimination from both adults and peers, emotion reactivity served as a baseline moderator of only perceived peer ethnic/racial discrimination as discussed earlier. It may be that the tendency to experience negative affect plays a more-important role in how youth are able to react to the discrimination from their peers. These types of reactions may occur more often when facing ethnic/racial discrimination from peers because past research has suggested that this type of discrimination tends to be more overt (Fisher et al., 2000). On the other hand, if the discrimination from adults is more covert (Fisher et al., 2000), all youth despite their level of emotional reactivity may have a less-strong affective response. However, this would have to be tested in future studies that examine whether emotional response differs depending on overt or covert acts of discrimination and whether emotional reactivity moderates that association. Further, the current findings should also be tested experimentally to see how youth differentially respond to discriminatory events in the school contexts and whether in fact there are different responses that are more adaptive depending on the source of discrimination.



## Race/Ethnicity and Gender

Race/ethnicity and gender did not play a large role in the current associations. Consistent with past work, African American youth reported greater discrimination than did Latino youth (e.g., Greene et al., 2006), and Latino youth reported greater baseline depressive symptoms at baseline (e.g., Brown et al., 2007). But, on the whole, Latino and African American youth demonstrated a similar pattern of results, suggesting that discrimination influences depressive symptoms similarly in both of these groups. Our sample size precluded additional tests examining whether emotional reactivity, positive ethnic/racial affect, or attributional style differentially interacted with discrimination in predicting depressive symptoms across both groups, but future research should examine this question. For example, positive ethnic/racial affect may be more protective for African American youth in the South than for Latino youth from immigrant families. Future work should examine how cultural processes (i.e., ethnic identity, acculturation) may differentially protect youth from different ethnic groups when facing discrimination.

Gender also did not emerge as an important predictor or moderator in the study. This is consistent with past longitudinal work, which also has not found significant gender effects on discrimination and depressive symptoms in ethnic minority youth (e.g., Brody et al., 2006; Greene et al., 2006). Our findings, in light of this past work, suggest that discrimination functions as an interpersonal stressor that predicts depressive symptoms across both genders; thus, future work should consider the unique effects of interpersonal stressors relating to aspects of the self compared to other types of interpersonal stress in predicting depressive symptoms. Future work should also examine whether cognitive vulnerabilities operate differently across genders. Past research has suggested that a negative attributional style interacts with peer stress to predict increases in depressive symptoms for adolescent girls and not boys (e.g., Prinstein & Aikins, 2004), and interpersonal models of depressive symptoms also highlight the unique role that interpersonal stress plays in the development of depressive symptoms for girls (e.g., Nolen-Hoeksema & Corte, 2004). However, given our sample size, we were unable to examine whether a negative attributional style was a risk factor for girls compared to boys. Future studies should continue to explore this question.

## Limitations and Conclusions

Although the current study extends past research on trajectories of discrimination and depressive symptoms, there are some limitations that are important to take into account. First, we were unable to examine how changes in the proposed moderators also developed over time. For example, it is likely that positive ethnic/racial affect may have continued to develop throughout high school, and future studies should examine its effects at multiple time points (e.g., Pahl & Way, 2006). Second, although our study captured whether youth had perceived discrimination, it did not examine the distress caused by the discriminatory events. To fully understand the role of perceived discrimination in predicting depressive symptoms, researchers will need to capture not only the extent to which a person feels discriminated against but also how much distress these experiences actually cause (e.g., Seaton et al., 2011).

The current study attempted to understand how risk factors present at the beginning of high school influenced the joint trajectories of discrimination and depressive symptoms. Our findings suggest that emotional reactivity may be a factor that puts ethnic minority youth at increased risk when experiencing discrimination, whereas positive ethnic/racial affect moderated the longitudinal impact of discrimination on depressive symptoms. Future research should continue to test questions within the multidimensional model (Harrell, 2000), because identifying these risk factors will aid in the development of prevention efforts for ethnic minority youth who are at risk for depression. In particular, researchers should focus on those factors that can serve as targets of intervention, such as helping youth develop better emotion regulation skills to lessen their emotional reactivity. Developmental theory posits that emotional reactivity is a temperamental characteristic that is genetically based, but emotion regulation refers to the processes used to modulate and inhibit emotional expression (Calkins & Hill, 2007). Thus, reinforcing effective emotion regulation skills can help emotionally reactive youth to better cope with experiences of discrimination. In fact, prevention programs focused on helping ethnic minority youth to cope with negative affect by developing positive coping skills (e.g., Gonzales et al., 2012) have been shown to prevent future internalizing symptoms. This suggests that perhaps these programs may help youth by strengthening their coping resources to effectively deal with discrimination. Similarly, our study suggests that bolstering a sense of positive ethnic/affect at the start of high school may be especially helpful in buffering against future experiences of discrimination. Although past prevention studies have not specifically focused on strengthening positive ethnic/racial affect, many prevention programs tailored to ethnic minority youth address issues of culture that likely serve to increase connections to one's cultural group (e.g., PLAAY; Stevenson, 2002). Our study further points to the fact that these efforts may be especially important at the transition to high school. By examining these processes longitudinally, research should continue to inform the specific time points where prevention programs may be most impactful to promote the positive adaptation of youth of color.

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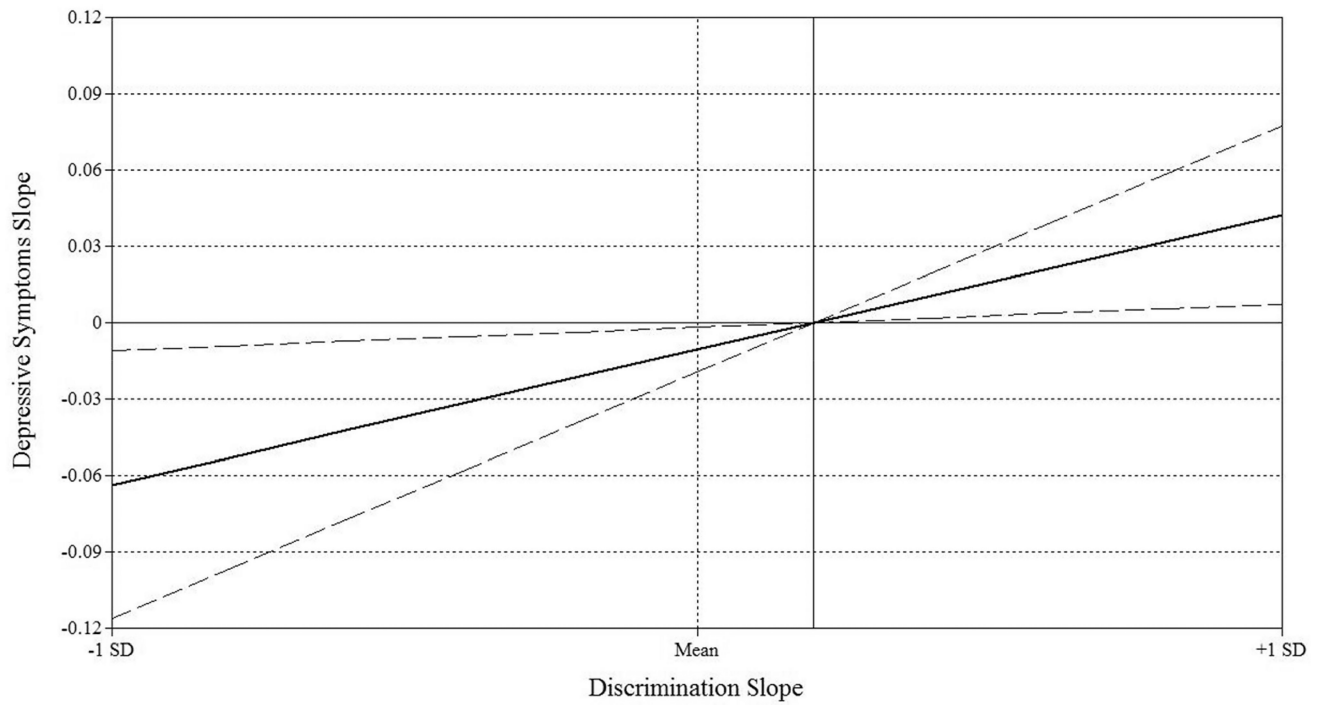
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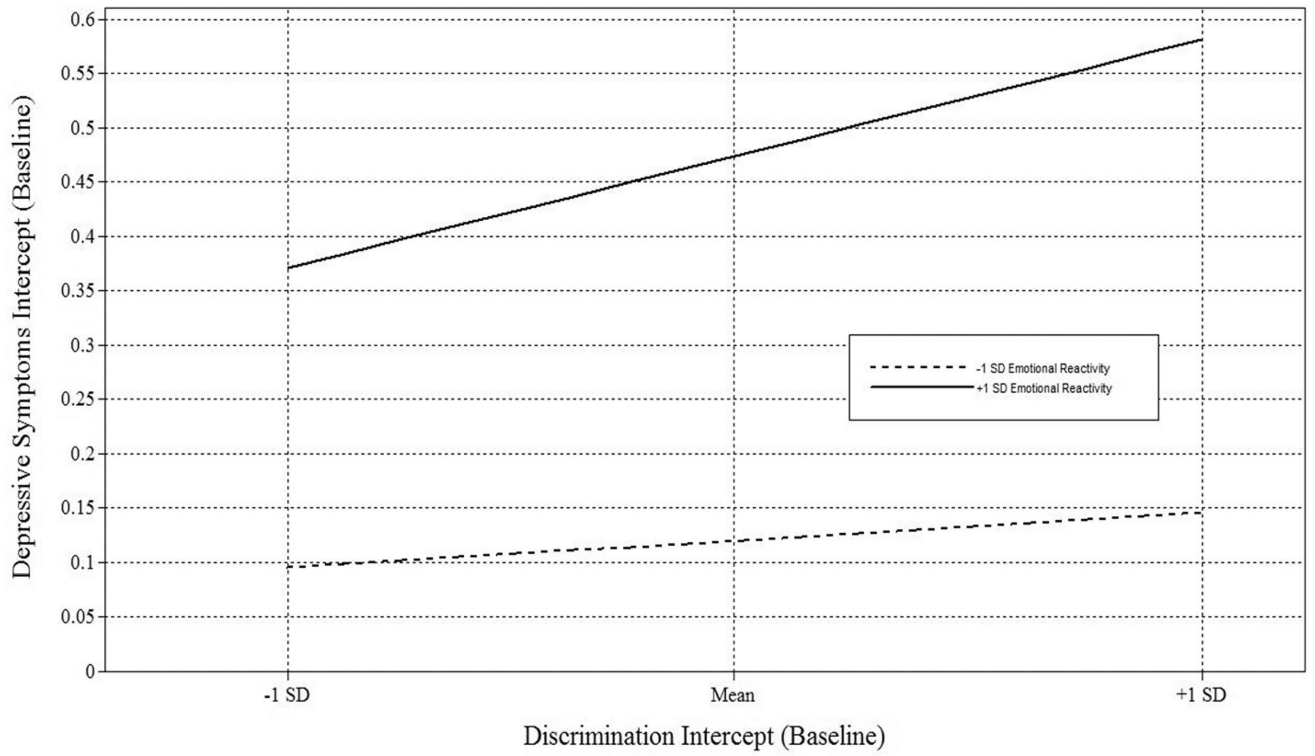


**Figure 1.** Analytic model.  $Z^*$  = Time 1 moderators, including gender, Latino ethnicity, positive ethnic/racial affect, emotional reactivity, and attributional style. All predictors and moderators were measured at Time 1. Individual time point indicators and paths from the predictors to the discrimination factor (for identification purposes) are not shown.

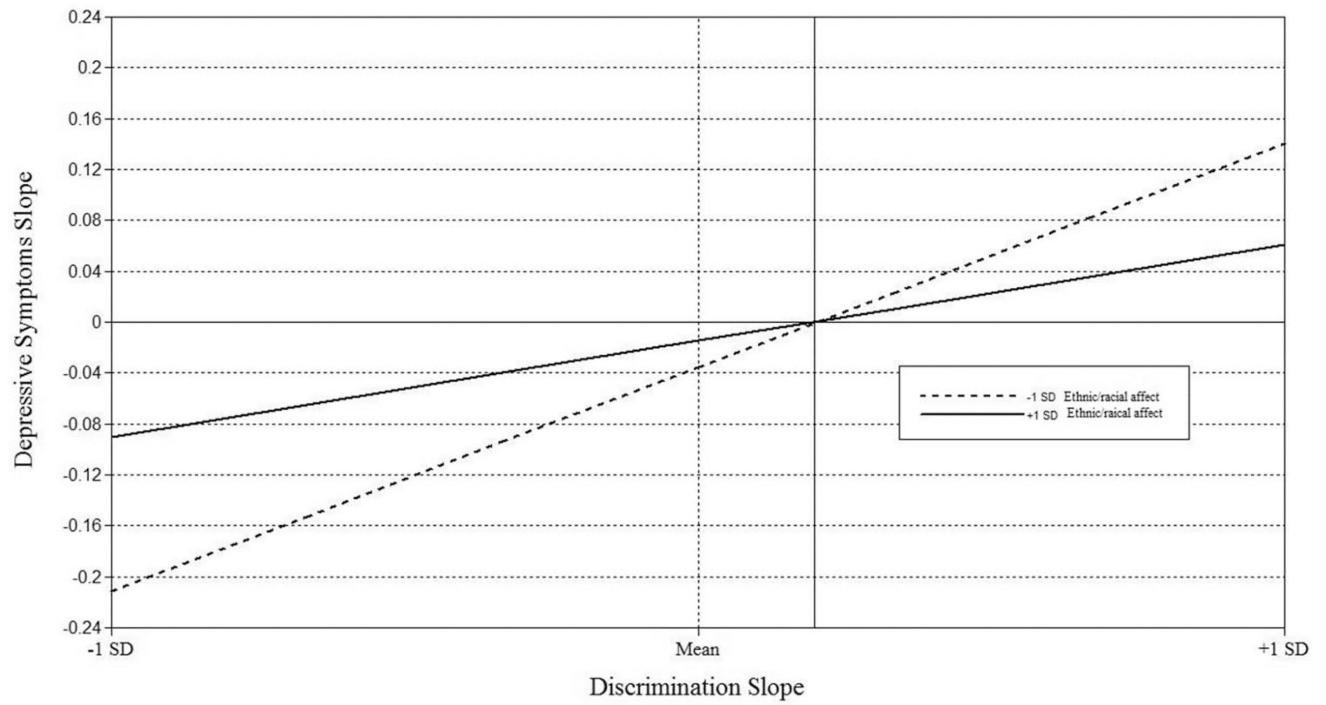


**Figure 2.**

Associations between peer discrimination and depressive symptoms over time. Bolded line indicates slope at lower, mean, and high levels of change in discrimination. Light dashed lines indicate 95% confidence intervals.



**Figure 3.** Interaction between baseline peer discrimination and emotional reactivity in predicting baseline depressive symptoms.



**Figure 4.** Interaction between discrimination-from-peers slope and positive ethnic/racial affect in predicting change in depressive symptoms over time.

Correlations Among Discrimination, Depressive Symptoms, Attributional Style, Emotional Reactivity, and Ethnic/Racial Affect Across Time

Table 1

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Male	—													
2. Latino	-.15	—												
3. Depression T1	-.18	.03	—											
4. Depression T4	-.35*	-.01	.63*	—										
5. Depression T6	-.15	.04	.60*	.76*	—									
6. Peer discrimination T1	.05	-.23*	.31*	.13	.12	—								
7. Peer discrimination T4	.00	-.04	.10	.18*	.33*	.48*	—							
8. Peer discrimination T6	.09	-.01	.31*	.38*	.42*	.57*	.67*	—						
9. Adult discrimination T1	.09	-.42*	.33*	.16*	.19*	.72*	.41*	.36*	—					
10. Adult discrimination T4	.11	-.12	.13	.18*	.32*	.54*	.86*	.66*	.51*	—				
11. Adult discrimination T6	.15	-.19	.34*	.37*	.29*	.57*	.62*	.75*	.59*	.73*	—			
12. Attributional style	-.17	-.17	.28*	.25*	.21*	.27*	.11	.19*	.17*	.03	.13	—		
13. Emotional reactivity	-.48*	-.15	.59*	.38*	.32*	.24*	-.01	.13	.20*	.00	.17	.23*	—	
14. Ethnic/racial affect	-.18	-.03	.04	-.03	-.07	.09	.04	-.02	.09	.10	-.16*	.00	.09	—

Note. T1, 4, 6 = Time 1, 4, 6.

\*  $p < .05$ .

**Table 2**

Unstandardized Coefficients (and Standard Errors) for Associations Between Discrimination Factors and Depressive Symptoms Factors

Predictor	Peer discrimination model depressive symptoms		Adult discrimination model depressive symptoms	
	Intercept	Slope	Intercept	Slope
Gender	.05 (.04)	-.03 (.03)	.05 (.05)	-.04 (.03)
Latino	.11 ** (.04)	-.03 (.03)	.16 ** (.05)	-.01 (.03)
Emotional reactivity	.20 *** (.03)	-.02 (.02)	.20 *** (.03)	-.02 (.03)
Attributional style	.03 (.02)	.00 (.01)	.04 * (.02)	.00 (.01)
Ethnic/racial affect	-.01 (.03)	.01 (.01)	-.02 (.03)	.01 (.02)
Discrimination intercept	.17 ** (.06)	-.02 (.04)	.22 *** (.06)	-.03 (.03)
Discrimination slope		.35 * (.15)		.07 (.08)

\*  
 $p < .05$ .

\*\*  
 $p < .01$ .

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 $p < .001$ .