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Los Angeles

Same-Ethnic Friendship Preference in Middle School:
Predictors and Consequences

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Education

by

Kara Heidi Akemi Kogachi

2019

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ABSTRACT OF THE DISSERTATION

Same-Ethnic Friendship Preference in Middle School:
Predictors and Consequences

by

Kara Heidi Akemi Kogachi

Doctor of Philosophy in Education

University of California, Los Angeles, 2019

Professor Sandra H. Graham, Chair

This dissertation consists of two studies that examined the development of same-ethnic friendship preferences over the course of middle school and its predictors and consequences. Both studies draw from a longitudinal school-based study of about 6,000 ethnically diverse early adolescents' social and psychological adjustment in 26 schools that varied in ethnic diversity. I employed a measure of same-ethnic friendship preference used in past research that accounts for the probability of having a same-ethnic friend, given the opportunities for forming both same- and cross-ethnic friendships in school. In Study 1, I examined the developmental trajectory of same-ethnic friendship preference and considered the compositional and organizational features of schools and classrooms that lead to these preferences. Results from latent growth curve models revealed that same-ethnic friendship preference increased over the course of middle school and that these friendship preferences were shaped by both the school and classroom ethnic context, above and beyond availability. At the start of middle school when friendship

networks are beginning to form, having fewer same-ethnic peers in schools that were less ethnically diverse predicted steeper increases in same-ethnic friendship preference. This interactive effect of school ethnic diversity and same-ethnic peers in school did not predict changes in friendship preferences. Rather, greater school ethnic diversity predicted steeper increases in same-ethnic friendship preference over time. Taking a more dynamic approach to understanding the ethnic composition, I also examined how youth are organized within schools in their academic classes. Results revealed more complex and longitudinal associations. African American and Asian youth, groups that are strongly academically stereotyped, who were underrepresented in honors classes showed steeper increases in same-ethnic friendship over time. In Study 2, I evaluated the interplay of same-ethnic friendship preference and ethnic identity and intergroup attitudes over the course of middle school, and whether these associations depended on the school ethnic context and ethnicity. The results revealed that for ethnic minority youth, same-ethnic friendship preference at the start of middle school predicted less steep decreases in ethnic identity over time. This effect did not vary by proportion of same-ethnic peers in school. The effect of ethnic identity on changes in same-ethnic friendship preferences was weaker, and only found among Asian youth when they had few same-ethnic peers in school. The longitudinal associations between same-ethnic friendship preference and attitudes favoring one's ingroup were weaker. Although friendships and attitudes were positively correlated at the start of middle school, their slopes indicated that they did not develop together over time. Additionally, a friendship selection effect was found such that attitudes favoring one's ingroup predicted steeper increases in same-ethnic friendship preference over time. However, friendships did not predict greater biases in attitudes over time.

Taken together, by considering the school structural and organizational features that lead to same-ethnic friendship preference, as well as the longitudinal associations between friendship preference, ethnic identity, and intergroup attitudes over the course of middle school, this dissertation identified how both formal and informal aspects of schools can lead to greater ethnic boundaries between youth, and the factors that can diminish those boundaries. Implications for prejudice reduction interventions and creating more inclusive school environments are discussed.

The dissertation of Kara Heidi Akemi Kogachi is approved.

Jaana Helena Juvonen

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VITA

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GENERAL INTRODUCTION

U.S. Census population projections estimate that by 2045, Whites will comprise less than half the U.S. population (Vespa, Armstrong, & Medina, 2018). For school-aged youth, these demographic shifts will occur nationally by 2020 and have already been realized in California, where the data for this dissertation were collected (CDE, 2014). The growing ethnic minority population in schools has the potential to create greater opportunities for interethnic contact, which can reduce prejudice and inequality (Pettigrew & Tropp, 2006; Tropp & Saxena, 2018). However, ethnic integration and inclusion in schools remain a challenge. During a developmental period of heightened sensitivity to peers, an increased importance is ascribed to friendships, which offer adolescents support and a place to define their emerging identities (Crosnoe, 2011). Race and ethnicity remain important social categories in the U.S., organizing interactions and influencing peer relationships and outcomes (Graham & Echols, 2018). When given the opportunity to form cross-ethnic friendships, adolescents tend to re-segregate along ethnic lines (Moody, 2001). While much of the adolescent friendship literature has described the unique benefits of cross-ethnic friendships on adolescent development (Davies, Tropp, Aron, Pettigrew, & Wright, 2011; Graham, Munniksma, & Juvonen, 2014; Kawabata & Crick, 2005; Turner & Cameron, 2016), the majority of adolescent friendships tend to be same-ethnic.

Indeed, homophily—or the preference for similar others—in friendship networks is pervasive. Preference for same-ethnic friendships raises concerns that youth will remain segregated by ethnicity in multiethnic schools and undermine the benefits of school ethnic diversity by reducing meaningful contact with cross-ethnic peers and increasing prejudice. However, preferring same-ethnic friendships is also developmentally normative and beneficial for adolescents, particularly for ethnic minority youth who often navigate racialized spaces in

their daily life (Tatum, 2017). Thus, a deeper understanding is needed of the development of friendship preference and the role of same-ethnic friendships not only on intergroup biases, but also on identity development and as resources for support.

Building on prior literature, this 2-study dissertation explored 1) the school and classroom structural features that predict same-ethnic friendship preference over the course of middle school, and 2) how friendship preference is interrelated with ethnic identity and intergroup attitudes over time. In both studies, I drew on a large and ethnically diverse sample that was recruited from 26 middle schools that systematically varied in ethnic diversity. Capitalizing on this diversity, I used a measure of same-ethnic friendship preference (log odds ratio α) that captures the likelihood of a friendship between members in a same-ethnic dyad relative to a friendship in a cross-ethnic dyad, accounting for the distribution of possible friendship ties across ethnic groups within multiethnic schools (Moody, 2001; Wilson & Rodkin, 2011). Thus, if a school was perfectly integrated, the likelihood of observing a same-ethnic friendship tie should reflect the distribution of same-ethnic pairs in the school. The term same-ethnic friendship preference is consistent with the literature and does not imply a particular cause as many different processes can influence preference or homophily (Wimmer & Lewis, 2010).

Study 1

In middle schools, preferring same-ethnic friendships may be reinforced by the formal structure and organization of schools and classrooms. Prior research suggests that the ethnic composition of schools and classrooms affect intergroup dynamics such that greater diversity and lower ethnic ingroup representation can increase preference for same-ethnic friendships (Moody, 2001; Mouw & Entwisle, 2006; Quillian & Campbell, 2003; Wilson & Rodkin, 2011). Therefore, the first study in my dissertation examined whether the ethnic composition of schools

and the organization of academic classes predict same-ethnic friendship preference at the start of middle school and over time. Building on past research, I first explored the effects of school ethnic diversity, the proportion of same-ethnic peers, and their interaction on friendship preference. Second, I took a more dynamic approach to diversity and examined the effects of how youth are organized in classrooms by testing whether the representation of ethnic ingroup peers in academic classes compared to school (i.e., being under or overrepresented) affects friendship preferences. Given that adolescents find meaning in how classrooms are organized and the degree to which they are encouraged to interact formally (Tyson, 2011), I am especially interested in whether this association depends on academic honors designation and ethnicity.

Study 2

Beyond school structural factors, the extent to which youth prefer same-ethnic friendships may depend on their emerging ethnic identity and intergroup attitudes (e.g., Rivas-Drake, Umana-Taylor, Schaefer, & Medina, 2017; Wolfer & Hewstone, 2018). Furthermore, ethnic segregation in friendships could create a social context in which ethnicity becomes salient, strengthening ethnic identity and ingroup preference over time. However, few studies have examined how these constructs are interrelated longitudinally. The second study in this dissertation examined the associations between same-ethnic friendship preference and ethnic identity, and separately, friendship preference and affective attitudes across middle school. I further examined whether these associations varied by the proportion of same-ethnic peers in school and by ethnicity.

Together, these studies deepen our understanding of how preferences for same-ethnic friendships develop across the middle school years. By examining school structural and individual characteristics, this dissertation sheds light on the conditions and for whom same-

ethnic friendship preferences are strengthened and affect developmental outcomes. Such findings have important implications for prejudice reduction strategies and for creating more inclusive schools.

STUDY 1

Longitudinal Effects of School and Classroom Ethnic Composition on Same-Ethnic Friendship

Preference in Middle School

Longitudinal Effects of School and Classroom Ethnic Composition on Same-Ethnic Friendship Preference in Middle School

Within multiethnic schools, adolescent friendship networks tend to be segregated based on race (McPherson, Smith-Lovin, & Cook, 2001; Moody, 2001; Quillian & Campbell, 2003). While having same-ethnic friendships is developmentally normative and beneficial during adolescence, particularly for ethnic minority youth, cross-ethnic friendships have the unique potential for reducing prejudice (Davies et al., 2011; Feddes, Noack, & Rutland, 2009; Graham et al., 2014; Pettigrew, 1998; Tatum, 2017; Tropp & Prenovost, 2008) and promoting psychosocial and academic adjustment in multiethnic schools (Benner & Wang, 2017; Graham et al., 2014; Hallinan & Williams, 1990; Kawabata & Crick, 2015; Lease & Blake, 2005). Given that preference for same-ethnic friendships could lead to greater segregation between groups, it is critical to understand the development of preference for same-ethnic friendships during adolescence, and how school structural factors like the school's ethnic composition and how students are organized in classrooms within schools, affect changes in friendship preferences over time. Prior research suggests that preference for same-ethnic friendships tends to increase as the school ethnic diversity increases and when ingroup size is small (Moody, 2001; Quillian & Campbell, 2003). Such findings suggest that there are challenges to the social integration of youth based on ethnicity in multiethnic schools. Yet, surprisingly few longitudinal studies have examined the degree of same-ethnic preference in friendships over time. Nor has there been much research on how both the school and classroom ethnic contexts can shape friendship preferences. The present study examined how both school ethnic composition and classroom organization affect same-ethnic friendship preferences over the course of middle school, and whether these patterns of associations varied by the ethnicity of students.

School and Classroom Ethnic Composition

During childhood and adolescence, schools serve as the source for most friendships which tend to form in classrooms (George & Hartmann, 1996; Gifford-Smith & Brownell, 2003). Much of the existing literature on same- and cross-ethnic friendship formation among children and adolescents has focused on propinquity effects, or the availability of peers based on the ethnic composition of schools or classrooms. Availability based on the ethnic composition of schools and classrooms is generally defined in two ways: group representation or ethnic diversity. In terms of group representation, Blau's (1977) macrostructural theory posits that as ethnic ingroup representation decreases, opportunities to form cross-ethnic friendships increase. Although past research has used the term ethnic diversity rather loosely, overall greater ethnic diversity provides more opportunities for interethnic contact, which in turn should lead to more positive intergroup relations and cross-ethnic friendships (Allport, 1954). In this study, when I use the term ethnic diversity, I refer to the measure of ethnic diversity (Simpson, 1949) that captures the probability that two students randomly drawn from a school will be of different ethnic groups, taking into account both the number of different ethnic groups present (variety), as well as the relative size of each ethnic group (evenness). Thus, an ethnically diverse school includes a number of different ethnic groups that are relatively equal in size.

Empirical evidence on the association between ethnic composition and friendships is mixed, although most studies find that adolescent friendships with cross-ethnic peers do not keep pace with increasing opportunities to form them, and that same-ethnic friendship preferences remain strong even after differences in opportunities are controlled (for a review see Thijs & Verkyten, 2014). This points to a second mechanism shaping same- and cross-ethnic friendships: homophily, or preference for similar peers (McPherson et al., 2001). There are

many different existing measures and ways of capturing homophily and same-ethnic friendship preference in the literature (Smith, Van Tubergen, Maas, & McFarland., 2016). These measures attempt to partial out propinquity by accounting for both the availability of same- and cross-ethnic peers in schools or classrooms. Thus, the effect of ethnic composition of schools and classrooms on homophily, or preference for same-ethnic friendships, captures the intergroup dynamics and climate within schools, over and above numerical composition (Mouw & Entwisle, 2006).

Does the ethnic composition of schools and classrooms have an effect on homophily and same-ethnic preferences in friendships? The evidence suggests that it does. In studies that have used the proportion of same-ethnic peers to measure school ethnic composition, when controlling for opportunities, numerically small groups show higher levels of same-ethnic friendship preference compared to numerically larger groups, presumably because ethnicity is more salient (Quillian & Campbell, 2003). This may be particularly true for youth of color (Wilson & Rodkin, 2011). When school ethnic diversity is used, studies show that as school diversity increases, preferences for same-ethnic friendships tend to increase except in the most diverse schools (Currarini, Jackson, & Pin, 2010; McDonald et al., 2013; Moody, 2001; Mouw & Entwisle, 2006).

Using a large national sample of middle and high school students, Moody (2001) found a curvilinear relationship between school ethnic diversity and same-ethnic friendship preference such that preference for same-ethnic friendships increased as ethnic diversity increased, peaking when middle and high schools became racially balanced (i.e., two ethnic groups of roughly the same size), then decreasing slightly in the most diverse schools. Based on opportunity, one might expect cross-ethnic friendships to be maximized for both groups in racially balanced

schools. Instead, same-ethnic friendships were maximized. Moody (2001) offers two interrelated mechanisms to explain this counterintuitive finding. First, as the minority group increases in size with increasing diversity, its members are more likely to find same-ethnic peers who they like as friends and share important attributes beyond ethnicity (increased intraracial diversity). Second, increases in the size of the minority group could threaten the majority, creating an *us vs. them* dynamic. Such findings suggest that to understand how school and classroom ethnic composition are associated with same-ethnic preference, studies should take into account ethnic diversity, relative group size, and ethnicity. However, few have done so (see Smith et al., 2016 for an exception). School ethnic diversity and the proportion of same-ethnic peers in school may interact in meaningful ways to affect preference for same-ethnic friendships (Benner & Crosnoe, 2011). For example, the effect of school ethnic diversity on the extent to which youth prefer same-ethnic friendships may depend on the proportion of same-ethnic peers in their school—youth with fewer same-ethnic peers in school may be more likely to prefer same-ethnic friendships when in a school with low ethnic diversity (when there is one relatively large ethnic outgroup) as opposed to high diversity (when there are a greater number of different ethnic groups present).

Furthermore, the existing literature on the effects of school context on same-ethnic friendship preference suggests that propinquity and homophily can evolve over time, yet we know little about how adolescent friendship patterns change based on school and classroom ethnic composition. A central feature of adolescent friendship networks is their fluidity. As youth change and develop, their social relationships adjust and evolve with them (Poulin & Chan, 2010). Most of the existing cross-sectional empirical evidence suggests that cross-ethnic friendships become less common throughout the schooling years and that preferences for same-

ethnic friendships increase over time (Aboud, Mendelson, & Purdy, 2003; DuBois & Hirsch, 1990; Graham, Cohen, Zbikowski, & Secrist, 1998; Hallinan & Teixeira, 1987; Shrum, Cheek, & Hunter, 1988). These increases in same-ethnic preference appear to be more pronounced in early adolescence, a time in development when peers and identities become increasingly important (Crosnoe & Johnson, 2011; Graham & Echols, 2018). For example, Hallinan and Smith (1985) found racial homophily increased from fourth to seventh grade.

Others, however, have documented a curvilinear relationship between grade level (3rd-12th) and friendship homophily (Shrum et al., 1988). These changes across time suggest same-ethnic friendships may not be as stable as one might think (McDonald et al., 2013). For example, at the start of middle school, students may not know each other and may be more likely to base friendships on characteristics that are socially meaningful, like ethnicity, but show less same-ethnic preference over time as they get to know cross-ethnic peers better (Stark, 2011; McPherson et al., 2001; Popp, Laursen, Kerr, Stattin, & Burk, 2008). Likewise, intergroup anxiety may be heightened at the start of middle school but later decline along with increasing opportunities for intergroup contact (Page-Gould, Mendoza-Denton, & Tropp, 2008). There is some empirical evidence to support this from a longitudinal study that showed preference for same-ethnic friendships decreased among students entering secondary school over the course of the school year, presumably as they became more familiar with each other (Jugert, Noack, & Rutland, 2011).

No study, however, has examined the effects of the ethnic composition of schools and classrooms on friendship preference longitudinally and it remains unclear whether greater ethnic diversity or fewer same-ethnic peers in school would reduce preference for same-ethnic friends over time (Ramos & Hewstone, 2018). Thus, the first aim of this study was to examine the

development of preference for same-ethnic friendships during middle school and whether the school ethnic context, as measured by both ethnic diversity and proportion same-ethnic peers in school, predicts initial levels and changes in same-ethnic friendship preference over time. I also explored the degree to which these associations varied by ethnicity.

Within-School Segregation and Tracking

An additional issue not fully addressed in the current literature on ethnic composition and same-ethnic friendship preference is the possibility of within-school segregation (Mickelson, 2015). Based on contact theory (Allport, 1954), within-school segregation can compromise the effects of school diversity on interracial friendships in two ways. First, intergroup contact will be limited if a student's access to the full range of peers in classrooms is restricted. Second, if the setting is structured such that status hierarchies are correlated with ethnicity, prejudice and stereotypes about group differences will be magnified making same-ethnic friendship preference more likely (see also Blau, 1977; Hewstone & Brown, 1986). Given that social status is a valued dimension for adolescents when choosing their friends (Rubin, Bukowski, & Parker, 2006), if a source of social status is academic achievement, same-ethnic friendship preference may be magnified if academic tracks within multiethnic schools are ethnically segregated (Frank, Muller, Mueller, 2013; Hallinan & Williams, 1989; Khmelkov & Hallinan, 1999; Kubitschek & Hallinan, 1998; McFarland, Moody, Diehl, Smith, & Thomas, 2014; Moody, 2001; Mouw & Entwisle, 2006; Tropp, 2018). In the U.S., White and Asian students tend to be overrepresented in higher tracks, while African American and Latino students are overrepresented in lower tracks (e.g., Oakes, 2005). Evidence for the negative effects of academic tracking on cross-ethnic friendships has been well-documented (e.g. Moody, 2001; Schofield & Sagar, 1977; Stearns, 2004). Indeed, empirical evidence suggests that status differences based on academic

achievement inhibited White students' friendships with African American youth, making them less likely to endure when academic performance was emphasized (Hallinan & Teixeira, 1987). In a different study, White youth who had high levels of academic achievement were less likely to nominate cross-ethnic friends and Asians tended to befriend more Whites (Hamm, Bradford Brown, & Heck, 2005).

Tracking practices have even been shown to affect social circles outside the classroom (Schofield & Sagar, 1977). Thus, part of the reason school ethnic diversity is related to greater same-ethnic friendship preference could be that the composition of academic classes may be different than the ethnic composition of schools (Juvonen, Kogachi, & Graham, 2018; Tyson, 2011). More specifically, students' ethnic ingroup representation in academic classes compared to school (under vs. overrepresentation), depending on academic course level (honors vs. general), may affect friendship preference. Prior research suggests that having more same-ethnic peers in high school math classes predicted greater perceived competence in advanced math courses, and greater belonging in math, regardless of course level (Graham & Morales-Chicas, 2015). The positive association was presumed to be because the same-ethnic peers in math classes were likely to also be close friends. Indeed, same-ethnic friendships have been shown to serve as important academic supports and resources, particularly for youth whose group is underrepresented in high level courses or negatively stereotyped academically (Riegle-Crumb et al., 2006; Riegle-Crumb & Callahan, 2009; Tyson, 2011). Furthermore, being in higher level, more competitive, courses in which one's ethnic group is underrepresented may heighten the salience of ethnicity and status differences between groups, leading to greater preferences for same-ethnic friendships, even when there are fewer opportunities to form them (Graham, 2010;

Juvonen, 2018). This may be particularly true for youth who are historically marginalized and negatively stereotyped academically (African American and Latino youth).

The Current Study

The current study was designed to examine the effects of school and classroom ethnic composition on preference for same-ethnic friendships over the course of middle school.

Preference for same-ethnic friendships is challenging to study given that there are many possible mechanisms that could lead to preference (Mouw & Entwisle, 2006; Wimmer & Lewis, 2010) and in empirical research, preference has been operationalized in a number of different ways. To capture same-ethnic friendship preference in this study, I employed a measure used in past research that provides the probability of having a same-ethnic friendship, given the opportunities for forming this friendship based on the availability of both same- and cross-ethnic peers in school (Jugert et al., 2011; Moody, 2001; Wilson & Rodkin, 2011). Due to the lack of longitudinal studies on friendship preference based on ethnicity, the first main goal of this study was to examine the initial levels of same-ethnic preference at the start of middle school, and its development over time. Based on past research, it was hypothesized that, on average, adolescents will show same-ethnic friendship preference at the start of middle school and increase in preference over time. I then examined whether initial status and trajectories varied by the ethnic composition of schools and by ethnicity. Given that few studies have examined these associations longitudinally, I explored how the school ethnic context shapes the development of same-ethnic friendship preference over time by including both the effect of school ethnic diversity and proportion of same-ethnic peers in school, as well as their interactive effect. However, I expected that youth with fewer same-ethnic peers in school would show greater

same-ethnic friendship preference in schools that were less ethnically diverse. I also explored how these associations varied by ethnicity.

The second main goal of the current study adopted a more dynamic approach to diversity by examining whether differences in one's ethnic ingroup representation in academic classes compared to school predicts same-ethnic friendship preference during the middle school years. Using measures of the ethnic composition in more proximal contexts like classrooms allows for measuring the dynamic effects of diversity that individual students experience as they move from class to class throughout the day (Echols & Graham, 2016; Graham, 2018; Juvonen et al., 2018; Kogachi & Graham, under review), which are important for understanding intergroup dynamics (Ramos & Hewstone, 2018). Of particular interest were the associations between ethnic ingroup representation in academic classes (under- vs. overrepresentation), academic honors designation, and ethnicity on trajectories of same-ethnic friendship preference. Because ethnic ingroup representation in academic classes and academic honors designation were measured at each time point, both measures were modeled at the within-person (time-varying measure) and between-person (time-invariant measure) level. In the absence of tracking data, I focus on the between-person (time-invariant) effects of average levels of ethnic ingroup representation in academic classes and academic honors designation across middle school as previous research with this data suggests that between-person, time-invariant effects likely capture the structural features of schools like academic tracking (Kogachi & Graham, under review). In contrast, within-person effects capture the relative yearly fluctuation of ethnic ingroup representation in academic classes compared to each adolescent's average. I therefore control for within-person effects. Given that previous research documents the importance of same-ethnic friendships for youth whose group is underrepresented in high level courses and negatively stereotyped academically,

I hypothesized that underrepresentation in honors academic classes would predict greater same-ethnic preference in friendships over time. I expected that this pattern would be especially evident for academically stereotyped and historically marginalized groups (African American and Latino youth). Because prior research has focused on African American and Latino youth, it is unclear how these associations will play out for Asian and White peers, but it was expected that these associations would be weaker.

Method

Participants

The sample for this study was drawn from the UCLA Middle School Diversity Project, an ongoing longitudinal study of 5,991 adolescents recruited in the fall of 6th grade from 26 urban middle schools in California and followed during the three years of middle school. The schools were selected to represent a variety of ethnic compositions. Six schools were ethnically diverse such that no single ethnic group represented a numerical majority, and members of each of the four major pan-ethnic groups (i.e., African American, Asian, Latino, and White) were present; 9 schools had two large and relatively equal ethnic groups (e.g., Latino and Asian) with very few members of other ethnic groups; and 11 schools had a clear numerical majority ethnic group (either African American, Asian, Latino, or White) with a smaller number of members from each of the other ethnic groups. To avoid confounding ethnicity and socioeconomic status (SES) in school selection, the sample was restricted to lower-middle and lower-SES communities. This was based on the percentage of students receiving free or reduced lunch and census data (e.g., median income, number of people in the work force) for neighborhoods in which schools were located. Schools with average enrollments of 900-1200 students and reading and math achievement (40th to 60th percentile on standardized tests) were selected.

The ethnic composition of the sample was based on student self-report. Students were

asked to select their race/ethnicity from the following options: American Indian, Black/African American, Black/other country of origin, East Asian, Latino, Mexican/Mexican American, Middle Eastern, Pacific Islander (including Filipino), South Asian, Southeast Asian, White/Caucasian, Multiethnic/Biracial, and Other. For the present study, some groups were combined (Black/African American and Black/other country of origin, East Asian and Southeast Asian, and Latino and Mexican/Mexican American). I acknowledge, however, heterogeneity within these aggregated classifications. Based on student self-report, the sample is ethnically diverse and included 31% Latinos, 19% Whites, 13% East or Southeast Asians, and 11% African Americans. The remaining 26% of participants who self-reported their ethnicities as either American Indian, Middle Eastern, Pacific Islander, South Asian, Multiethnic, or Other were excluded from analyses as they were either too small or are not recognized as ethnic categories in school demographic data available at the California Department of Education (CDE). The analytic sample was therefore limited to the four major pan-ethnic groups.

Procedure

Participants were recruited in three cohorts in the fall of 6th grade and were surveyed in the fall and spring of 6th grade, and in the spring of 7th and 8th grade. To increase return rates of parental consent forms, two ipods were raffled in each school for students who returned the form. Across the 26 schools, 83% of the consent forms were returned with parents granting permission to participate. Surveys were group administered and read aloud by a trained graduate student researcher. Participants answered questions in survey booklets as a second research assistant circulated around the classroom to help individual students as needed. Students received honoraria of \$5 for each 6th grade survey, \$10 for 7th grade, and \$10 for 8th grade.

Measures

Time-invariant predictors.

Ethnicity. Self-reported ethnicity was dummy coded such that Whites are the reference group.

Proportion same ethnic peers at school. To control for size of participants' ethnic group, the proportion of same ethnic peers in school was calculated using school-level race/ethnicity data collected from the CDE website. CDE data were aggregated into four primary racial/ethnic categories: African-American, Asian (Asian, Pacific Islander, Filipino), Latino, and White. Percent same-ethnicity peers reflects the proportion of students in the school that matched students' racial/ethnicity category. The values of this measure ranged from 0 to .68, indicating substantial differences in the relative size of ethnic groups across the schools.

School ethnic diversity. Objective school ethnic diversity was measured based on school-level ethnicity data collected from the California Department of Education (CDE) and using Simpson's diversity index (1949):

$$D_S = 1 - \sum_{i=1}^g P_i^2$$

where P is the proportion of students in the school who are in ethnic group i . This proportion is squared (P_i^2), summed across g groups, and then subtracted from 1. D_S gives the probability that any two students randomly selected from a school will be from different ethnic groups. Values can range from 0 to approximately 1, where higher values indicate greater diversity (i.e., more ethnic groups that are relatively evenly represented with no clear numerical majority). Thus, Simpson's index captures the number of different groups in a setting and the relative representation of each group. D_S ranged from, .48 to .77, ($M = .64$, $SD = .08$) indicating moderate to high diversity.

Ethnic ingroup representation in academic classes compared to school. In order to calculate academic classroom ethnic ingroup exposure, classmate information from student transcripts were obtained (Echols & Graham, 2016). Because we had a high rate of participation within schools ($M = 84\%$), this is a good estimate of students' actual exposure to ingroup peers. I averaged the academic courses because there were few differences in the average proportion of same-ethnic classmates represented across the classes at any of the waves. Participants ($n = 720$) who were in more than one class that had less than 7 students in the sample (2 *SDs* below the mean of 21 students) were removed for that wave from analyses. For participants in this analytic sample, the proportion of same-ethnic peers in the school was calculated based on CDE data. To calculate academic classroom ethnic ingroup exposure, I subtracted school proportion same-ethnic peers from average classroom proportion same-ethnic peers. Positive scores indicate more same ethnic peers in academic classes compared to school (i.e. overrepresentation), while negative scores indicate fewer same ethnic peers in one's classes compared to school (i.e., underrepresentation). The time-invariant measure was computed by taking the average of this measure for each student across all waves of middle school ($M = .00$, $SD = .13$, range = $-.48 - .52$).

Academic honors designation. Based on school transcripts, each student's academic courses were coded such that honors courses were given a 1 and all other courses were given a 0. Codes were then aggregated, and scores of 3 or higher (i.e., student took 3 or more honors courses) were re-coded as 1 to indicate academic honors designation. All other scores were coded as 0 to indicate not honors. Students in accelerated academic programs (e.g., magnet, gifted) were automatically coded as 1 to indicate academic honors (12.7%-28% of students had an academic honors across the four waves of data).

Time-invariant covariates.

Gender. Students self reported their gender. Gender was binary-coded, with females assigned values of 1 and males assigned values of 0.

Parent education. The parent or guardian with whom the student lived was asked to complete a questionnaire about their highest level of education. A weighted score using educational level was computed, with higher scores indicating higher educational attainment. This measure ranged from 0 to 5 (0 = *elementary or junior high school* to 5 = *graduate degree*) ($M = 3.86, SD = 1.59$).

Generational status. Generational status was determined with three questions asking whether the student and his or her parents were born in the U.S. Students born abroad were considered first generation. Second- and third-generation students (U.S. born students with one foreign-born parent or both U.S.-born parents) were collapsed and assigned values of 0 ($N = 3,906$). First-generation students were assigned values of 1 ($N = 515$).

Academic grade point average (GPA). Transcripts were obtained from school records data for each year of the study. Grades of all academic core courses (English, math, science, social studies) were coded on a scale ranging from 4.00 (A/A+) to 0.00 (F), with increments of .33 to indicate a grade that included a plus or minus. I then computed the average academic GPA by including the grades of all our study participants in each of these core classes at each wave of data. To measure the time-invariant control for mean levels of achievement across middle school, I computed the average GPA for each participant across all waves of data ($M = 2.82, SD = .92$).

Proportion free or reduced priced meals (FRPM). Proportion of students receiving FRPMs will be included as a school-level covariate. FRPM served as a proxy for school SES.

Time-varying covariates.

When constructs are measured at each time point like ethnic ingroup representation in academic classes and academic honors designation, both between-person effects (the time-invariant average of each measure across waves) and within-person effects (time-varying deviations from the average) should be modeled (Curran & Bauer, 2011).

Ethnic ingroup representation in academic classes compared to school. In addition to the time-invariant average levels of ethnic ingroup representation in academic classes across the middle school years (see above), I also controlled for time-varying levels of ethnic ingroup representation in academic classes compared to school ($M_{\text{range}} = .00-.00$, $SD_{\text{range}} = .06-.08$, range = $-.39-.40$).

Academic honors designation. See above in time-invariant predictors for description of measure.

Academic grade point average (GPA). See above for description of measure ($M_{\text{range}} = 2.80-2.90$, $SD = .94-1.01$).

Outcome.

Same-ethnic friendship preferences. Friendships were measured using a well-established sociometric procedure used in prior research (Graham et al., 2014). At each wave, students were asked to list the students who they were “good friends” with in their grade. A list of the names of all students in their grade regardless of whether those students received parent consent, was provided upon request for spelling purposes. Students were allowed to make an unlimited number of nominations. Unilateral, as opposed to reciprocal, friendship nominations were used in this study because I was interested in who students considered to be their friend, regardless of whether the other person also viewed them as a friend. To determine if a friendship

tie was same- or cross-ethnic, each student's self-reported ethnicity was used and matched to the target nominator's own self-reported ethnicity. Friendships were considered same-ethnic if they came from the same pan-ethnic group as the nominator (e.g., East/Southeast Asian). Although the analyses focused on the four major pan-ethnic groups (African American, East/Southeast Asian, Latino, and White), students from all ethnic groups in schools were included to compute cross-ethnic friendships. To assess preference for same-ethnic friends relative to cross-ethnic friends, I used the invariant log odds measure that computes same- and cross-ethnic friendship nominations, net the opportunities for same- and cross-ethnic contact in school (Charles & Grusky, 1995; Moody, 2001; Wilson & Rodkin, 2011). The odds of nominating a friend of the same-ethnicity relative to the odds of nominating a friend of a different ethnicity was computed using the following formula:

$$\alpha = AD/BC$$

where A is the number of same-ethnic friends, B is the number of cross-ethnic friends, C is the number of same ethnic peers not nominated as a friend, and D is the number of cross-ethnic peers not nominated as a friend. An advantage of using this measure is that it does not depend on the total number of nominated friends and the total number of same- or cross-ethnic peers in the school (Moody, 2001). Given the distribution of odds ratios is highly skewed, α was log-transformed. Values of the log-transformed α can range from $-\infty$ to $+\infty$, with positive values indicating preference for same-ethnic friends, and negative values indicating preference for cross-ethnic friends. Zero indicates neutrality ($M_{\text{range}} = 1.01-1.38$, $SD_{\text{range}} = 4.04-4.23$)

Analytic Plan

To examine the aims of this study, I conducted a series of latent growth curve models (LGCMs). The first aim of the study was to examine the level of same-ethnic friendship

preference at the start of middle school, the development of same-ethnic friendships over time, and whether school ethnic composition and ethnicity predicted different initial levels and trajectories of same-ethnic friendship preference. To do this, I first estimated an unconditional model to establish the initial levels of same-ethnic friendship preference at the start of middle school and its trajectory to model rate of change over time. I then estimated a series of conditional models to examine the effects of the school ethnic composition on both initial status and change in same-ethnic friendship preference, using both school ethnic diversity and proportion of same-ethnic peers, as well as ethnicity (see Figure 1). Demographic and time-varying achievement indicators were controlled for in each model.

The second aim of this study was to test whether average levels of ethnic ingroup representation in academic classes compared to school (time-invariant, between-level effects) predicted differences in initial status and change in same-ethnic friendship preferences, and whether this association varied by average academic honors designation (time-invariant, within-level effects) and ethnicity. To do this, I regressed the intercept and slope of same-ethnic preference on ethnic ingroup representation in academic classes, academic honors designation, ethnicity, and their interaction terms. Because ethnic ingroup representation in academic classes and honors designation vary over time, all models included both within- and between-person (time-varying and time-invariant) effects of each measure on changes in preference for same-ethnic friendships. The within- and between-person effects were disaggregated using centering recommendations outlined by Curran and Bauer (2011). Of particular interest was the time-invariant effect of ethnic ingroup representation in academic classes and academic honors designation at the between-person level, or the average overall ethnic ingroup representation in academic classes and honor status across middle school. Time-invariant representation, along

with all other continuous time-invariant covariates were grand-mean centered (i.e., centered at the sample mean). At the within-person level, the time-varying estimates of classroom ingroup representation, honors designation, and GPA were group-mean centered (i.e., centered at each individual's average level of each construct across middle school) to estimate youths' deviations from their own average across each wave of data. By including time-varying ethnic ingroup representation in academic classes and honors designation, I can control for the dynamic short-term deviations from the overall growth trajectory of outcomes and allow participants to serve as their own control. This eliminates unmeasured time-invariant confounds as alternative explanations, providing stronger inferences regarding the associations of interest (Raudenbush & Bryk, 2000).

In constructing the final LGCMs for both study aims, I rotated reference groups to test each ethnic group comparison. Significant interactions were probed at 1 SD above and below the mean for continuous variables. Nonsignificant interaction terms were removed (Aiken & West, 1991). All analyses were conducted in Mplus (Muthén & Muthén, 1998-2012, version 7.3) using TYPE=COMPLEX to account for nesting of students within schools.

Results

Intercorrelations and descriptive statistics of the main study variables are represented in Table 1. Same-ethnic friendship preference showed moderate stability over time and was on average significantly and negatively correlated with school ethnic diversity, positively correlated with proportion same-ethnic peers in school, and positively correlated with ethnic ingroup representation in academic classes compared to school.

Unconditional Growth Model

To examine the overall trajectory or change over time in same-ethnic friendship preference, an unconditional LGCM was estimated. Factor loadings of the trajectory's intercept or initial status at the fall of 6th grade were set to 1 to represent the starting point. Factor loadings of the second latent factor represented the trajectory's slope or rate of change. To define the slopes as linear, the loadings were set to 0, .5, 1.5, and, 2.5 reflecting the data collection schedule. To test the possibility of nonlinear trajectories, I estimated a freed loading model in which only two parameters for the slope factor were fixed with time-codings. The rest of the nonlinear "shape" was freely estimated. Chi-square difference tests were computed to compare model fit and estimates of the coefficients were examined to determine if nonlinear growth should be modeled (Bauer & Cai, 2009). The freed loading model did not result in significant improvements of model fit indicating that modeling a linear trajectory fit the data well.

The unconditional model for same-ethnic friendship preference fit the data well, $\chi^2 (5, N = 4,537) = 18.90, p = .002$; CFI = 1.00; RMSEA=.03, 90% CI [.01, .04]. The mean level of same-ethnic friendship at the start of sixth grade was .31 reflecting that adolescents on average preferred same-ethnic friendships. On average, adolescents also showed greater same-ethnic friendship preference over time ($b = .10, p < .01$). There was significant variation in initial status and growth indicating that adolescents start at different levels of same-ethnic friendship preference ($b = 11.04, p < .001$) and grow subsequently at different rates ($b = 1.53, p < .001$). The initial level of friendship preference at the start of sixth grade was negatively correlated with its slope factor ($b = -.49, p < .001$) revealing that adolescents who show more same-ethnic friendship preference at the start of middle school showed less steep increases in same-ethnic friendship preference over time compared to those who showed less same-ethnic friendship

preference at the start of middle school who have steeper increases in same-ethnic friendship preference over time. This may capture a “ceiling effect” given those who report higher initial levels have a greater opportunity to decrease over time.

Effects of School Ethnic Composition and Ethnicity on Same-ethnic Friendship Preference

To address the first aim of the study and examine the effect of school ethnic composition and ethnicity on the initial status of and change in same-ethnic friendship preference, conditional models including school ethnic diversity, proportion same-ethnic peers in school, ethnicity, and their interactions were tested in a stepwise process. To test the possibility of a curvilinear effect of school ethnic diversity on same-ethnic friendship preference (Moody, 2001), the squared term for school ethnic diversity was included to predict both the intercept and slope, however, the effects were non-significant and not included in the final model.

The final conditional model fit the data well $\chi^2 (27, N = 3,901) = 93.14, p < .001$; CFI = .99; RMSEA=.02, 90% CI [.00, .02]. As shown in Table 2, African American youth showed less same-ethnic friendship preference compared to White youth ($b = -.76, p < .05$), and steeper increases in same-ethnic friendship preference compared to White youth over time ($b = .24, p < .05$). There were no other ethnic differences.

Turning to the effects of school composition, there was a significant effect of the interaction between school ethnic diversity and proportion same-ethnic peers predicting the intercept of same-ethnic friendship preference ($b = 17.56, p < .05$), but no significant effect of the interaction on the slope ($b = -4.22, p = .15$). Furthermore, this two-way interaction did not vary by ethnicity for either the intercept (African American: $b = -1.29, p = .72$; Asian: $b = 6.07, p = .07$; Latino: $b = 15.57, p = .07$) or slope (African American: $b = 1.90, p = .18$; Asian: $b = .12, p = .94$; Latino: $b = 2.75, p = .13$) and therefore, 3-way interactions were removed from the final

model. As depicted in Figure 3, tests of simple slopes revealed that school ethnic diversity was only predictive of same-ethnic friendship preference at the start of middle school for youth who were in schools with fewer same-ethnic peers ($b = -6.95, p < .001$). Specifically, as school diversity increased, same-ethnic friendship preference decreased for those with fewer same-ethnic peers in school. Thus, youth were less-likely to prefer same-ethnic peers in schools where there were a greater number of ethnic groups represented as opposed to when there was one large outgroup. There was no effect of school ethnic diversity on same-ethnic friendship preference for youth in schools with a greater number of same-ethnic peers ($b = -1.37, p = .55$).

In terms of the slope for same-ethnic friendship preference, there was no significant main effect of proportion same-ethnic peers in school ($b = -.39, p = .26$). There was, however, a significant main effect of school ethnic diversity. Specifically, greater school ethnic diversity predicted steeper increases in same-ethnic friendship preference over time ($b = 1.29, p < .05$).

To summarize thus far, adolescents on average showed preferences for same-ethnic friendships and same-ethnic friendship preference increased over time. The effect of school ethnic diversity on the initial status of same-ethnic friendship preference depended on the proportion of same-ethnic peers in school such that youth with fewer same-ethnic peers in school showed less same-ethnic friendship preference as school ethnic diversity increased. This interaction did not significantly predict change in same-ethnic friendship preference. Rather, there was a significant main effect of school ethnic diversity on changes in same-ethnic friendship preference such that greater school ethnic diversity predicted steeper increases in same-ethnic friendship preference over time.

Effects of Ethnic Ingroup Representation in Academic Classes and Effects of Honors Designation

To address the second aim of the study, I tested the effect of the organization of youth in academic classes, academic honors designation, and ethnicity on the initial status and change in same-ethnic friendship preference. Time-invariant average levels of ethnic ingroup representation in academic classes compared to school, honors designation, ethnicity, and their interactions were added to both the intercept and slope factors (see Table 3). There were no significant 3-way interactions predicting the intercept. However, there was a significant 3-way interaction predicting the slope involving African American ($b = -6.67, p < .001$) and Asian ($b = -10.91, p < .001$) youth compared to White youth. Reference groups were rotated and no other ethnic group differences were found. As depicted in Figure 4, tests of simple slopes revealed that for African American ($\beta = .38, p < .001$) and Asian ($\beta = .53, p < .01$) youth, being underrepresented in academic honors classes predicted significant increases in same-ethnic friendship preference over time. In contrast, there were no changes in same-ethnic friendship for Whites who were underrepresented in honors classes ($\beta = .16, p = .52$). Rather, for White youth, being underrepresented in non-honors courses was predictive of steeper increases in same-ethnic friendship preference over time ($\beta = .29, p < .05$). No other slopes showed significant change in same-ethnic friendship preference.

The between-person effect of time-invariant ethnic ingroup representation in academic classes as reported above was of particular interest in this study because I wanted to examine how being more under or overrepresented in academic classes across middle school affected trajectories of same-ethnic friendship preference. However, I acknowledge that there could be fluctuations in representation from year to year and I controlled time-specific measures of ethnic ingroup representation in academic classes. There was a significant within-person effect ($b = 2.45, p < .01$) revealing that in years when there were more ethnic ingroup peers in academic

classes than usual, youth showed more same-ethnic friendship preference than usual. There were no significant interactions between time-varying ethnic ingroup representation in academic classes with academic honors designation or ethnicity. These non-significant interactions were not included in the final model.

Discussion

The purpose of this study was to examine how school and classroom ethnic composition affect same-ethnic friendship preference across the middle school years. Relatively little is known about the development of friendship preferences based on ethnicity across different ethnic groups, and how the school and classroom context shape friendship dynamics longitudinally. Thus, the first aim of the study was to examine the overall trajectory of same-ethnic friendship preference over time and examine the independent and moderating effects of ethnicity, proportion same-ethnic peers in school, and school ethnic diversity. To examine the second main aim of this study, the ethnic context of academic classes was considered. Specifically, ethnic ingroup representation in academic classes compared to school, academic honors designation, and ethnicity were examined. The study drew from a unique sample of adolescents from four of the major pan-ethnic groups who ranged in numerical representation across schools that varied in ethnic diversity. By using a measure of preference for same-ethnic friendships that controlled for opportunity, the effect of ethnic composition of schools and classrooms capture the intergroup dynamics and climate within schools, over and above numerical composition (Mouw & Entwisle, 2006).

On average, all youth showed preference for same-ethnic friendships at the start of middle school, which is consistent with well-documented findings that adolescents tend to prefer same-ethnic friendships and that cross-ethnic friendships do not keep pace with increased

opportunities to form them (e.g., Thijs & Verkyten, 2014). At a time in development when ethnicity takes on added significance (Graham & Echols, 2018), I also found that early adolescents show steeper increases in same-ethnic friendship preferences over the course of middle school although there was significant variability in friendship trajectories.

School Context: Ethnic Diversity and Proportion Same-ethnic Peers

When examining school ethnic composition, I found that at the start of middle school, the effect of school ethnic diversity on same-ethnic friendship preference depended on the proportion of same-ethnic peers in school. Specifically, greater school ethnic diversity significantly predicted less same-ethnic friendship preference, but only when youth had fewer same-ethnic peers in school. In other words, youth with fewer same-ethnic peers in school showed more same-ethnic friendship preference when school ethnic diversity was low (i.e., there was one relatively large outgroup), but less same-ethnic friendship preference when school ethnic diversity was high, (i.e., when outgroups were made up of multiple, numerically smaller, ethnic groups). Having more same-ethnic peers in school predicted greater same-ethnic friendship preference, regardless of school ethnic diversity. Past research has shown that having more same-ethnic peers in school leads to greater same-ethnic friendship preference presumably because the extra effort to cross ethnic boundaries is not necessary if youth have a greater pool of potential same-ethnic friends who share other attributes that are important for friendship formation (Moody, 2001; Hamm, 2000; Hallinan & Teixeira, 1987b). In contrast, youth in numerically smaller numbers have been shown to “hunker down” in the face of a larger outgroup and seek solidarity with ingroup friends (Quillian & Campbell, 2003; Wilson & Rodkin, 2011).

The findings from the present study suggest that at least at the start of middle school, ethnically diverse schools can prevent youth with fewer same-ethnic peers from turning inward.

More specifically, when outgroups are made up of many different groups relatively equally represented as opposed to having one large outgroup, students with fewer same-ethnic peers in school were more likely to cross ethnic boundaries in their friendships. This suggests that in contexts that are less diverse and there is one large outgroup, youth with fewer same-ethnic peers in school may feel more threatened and marginalized and seek solidarity with same-ethnic peers. These associations did not vary by ethnicity indicating that a heightened salience of ethnic group membership when being numerically smaller in school was not limited to ethnic minority adolescents but also included White youth. Thus, the start of middle school may be an especially critical time to target feelings of threat or marginalization for youth of all ethnic groups in schools where there are fewer students like them and that are less ethnically diverse.

There was no significant effect of the interaction of school ethnic diversity and proportion same-ethnic peers on trajectories of same-ethnic friendship preference indicating that these protective effects at the start of middle school did not reduce trajectories of increasing same-ethnic friendship preference over time. Rather, there was a linear effect of greater school ethnic diversity that predicted steeper *increases* in same-ethnic friendship preference over time. Cross-sectional research has documented that preferences for same-ethnic friendships tends to increase with greater school ethnic diversity, except in the most diverse schools (Currarini et al., 2010; McDonald et al., 2013; Moody, 2001; Mouw & Entwisle, 2006). Thus, diversity did not have the buffering effect of reducing the developmental trend of increasing same-ethnic friendship preference over time for youth with fewer same-ethnic peers in school. There were no ethnic group differences in the effects of school diversity.

Past research suggests school ethnic diversity is associated with higher levels of achievement (Hallinan & Williams, 1989; Hanushek, Kain, & Rivkin, 2009), and in our work,

ethnic diversity is related to less vulnerability (Juvonen et al., 2018; Juvonen, Nishina, & Graham, 2006). School ethnic diversity has also been associated with greater intergroup tensions such as increased experiences of discrimination (e.g., Benner & Graham, 2013). We do not yet know how diversity impacts other important social processes in adolescence. It is unclear in this study, for example, whether youth are hunkering down and preferring same-ethnic friendships because of more negative race-related encounters, or whether ethnicity is more salient in ethnically diverse schools leading youth to seek out more same-ethnic friendships at a time in development when ethnic identity and understanding what it means to be a member of one's ethnic group is taking on added significance (Rivas-Drake et al., 2014). I will come back to this issue of friendships and ethnic identity in Study 2. More research is needed on how school ethnic diversity affects social processes beyond vulnerability as they likely have different effects on developmental outcomes.

Classroom Context: Ethnic Ingroup Representation and Academic Honors Designation

The second main goal of the current study was to examine how the organization of youth in academic classes shapes same-ethnic friendship preference during middle school by examining the effect of ethnic ingroup representation in academic classes, academic honors designation, and ethnicity. Findings indicate a more complex pattern of results. Specifically, compared to Whites, African American and Asian youth who were underrepresented in their honors classes showed steeper increases in same-ethnic friendship preference over time. Latino youth were not significantly different from White youth and showed no such changes over time.

These interactive effects differed from my original hypotheses that underrepresentation in honors classes would be most influential for groups that are negatively stereotyped academically and historically marginalized. Underrepresentation in academic classes can create a threatening

environment for these youth and same-ethnic friendships may be important supports both socially and academically (Graham & Morales-Chicas, 2015; Riegle-Crumb et al., 2006; Riegle-Crumb & Callahan, 2009; Tyson, 2011). As such, the findings for African American youth were expected. Although I did not hypothesize that Asian youth would show similar patterns, Asian youth are also strongly stereotyped academically albeit “positively”. The findings suggest that regardless of whether the stereotypes are “positive” or negative, underrepresentation in this case could also lead to heightened awareness of group membership as well as stereotypes about one’s group (Frey & Tropp, 2006). Indeed, social psychological research suggests that both ingroup and outgroup members tend to focus on groups whose representation is low (Brewer & Kramer, 1985) and may view these groups more stereotypically (Mullen, 1991). Furthermore, these students may also experience heightened concerns about being judged based on stereotypes (stereotype threat) (Steele & Aronson, 1995). Thus, if underrepresentation in academic honors classes heightens the awareness of ethnic group membership and cues academic stereotypes for African American and Asian youth, perceived differences between ethnic ingroup members and outgroups should be enhanced and lead youth to prefer more same-ethnic friendships over time. This phenomenon may be most salient for African American and Asian youth given the strong academic stereotypes associated with both groups, and the overall academic achievement levels.

Furthermore, although greater same-ethnic friendship preference was the result for both groups, it is unclear whether negative stereotypes directed from outgroups pushed youth to seek solidarity and support among same-ethnic friends, or whether “positive” ingroup stereotypes pushed youth toward their more attractive same-ethnic peers. The distinction is important considering the potential psychosocial and academic impacts of these mechanisms. For example, underrepresentation and being negatively stereotyped may lower feelings of connection to

school, but underrepresentation and “positive” stereotypes might have an effect on experiences of peer victimization and social status. I hope to pursue the long-term adjustment consequences of underrepresentation in different classes for specific ethnic groups who carry the burden of academic stereotypes, whatever their content. Deeply entrenched achievement disparities in this country (and in our sample) suggest that a focus on African American and Asian youth is a good first step.

Implications

Results from this study offer new insights into friendship preference processes for ethnically diverse early adolescents and highlight the importance of understanding the adolescent in context. Representation and status hierarchies mattered in both the school and classroom context for friendship dynamics. Experiencing underrepresentation at both the school level (having fewer same-ethnic peers in school) and in academic classes (having fewer same-ethnic peers than expected), was associated with preferring same-ethnic friendships. School ethnic diversity served as a buffer to prevent youth with fewer same-ethnic peers from “hunkering” down. In the classroom context, honors designation exacerbated same-ethnic friendship preferences, particularly for academically stereotyped youth. Thus, underrepresentation can be a powerful cue in the school and classroom environment that determines whether youth form friendships with others or seek ingroup solidarity. If this is the case, reducing group salience in such contexts should reduce intergroup biases as one way to promote youth to cross ethnic boundaries as hypothesized by social identity theory (Tajfel & Turner, 1986). More work is needed on reducing social and academic hierarchies as a route to fostering cross-ethnic friendship development during early adolescence (Cappella, Hughes, & McDormick, 2017; Cappella, Kim, Neal, & Jackson, 2013).

Furthermore, findings from this study indicated that school ethnic composition had effects on friendships at the start of middle school but did not predict friendship trajectories, whereas the classroom context did. Examining the organization of youth into academic classes by ethnicity and honors designation suggested that this more proximal context shaped the friendship choices of early adolescents in complex ways over time, including ethnic-specific preferences. This is not surprising given that measures of the ethnic context of schools are generally a static feature of the school environment. Using measures of the ethnic composition in more proximal contexts like classrooms or friendship networks not only captures dynamic effects of the ethnic context, but also the unique experience of the ethnic context for individual students (Echols & Graham, 2016; Graham, 2018; Juvonen et al., 2018). When studying the effects of ethnic diversity on developmental outcomes, more research taking a dynamic and developmental approach is needed to better assess the lived experiences of adolescents and the varying degrees of diversity they are exposed to across different contexts and over time (Graham, 2018; Yip, Cheon, & Wang, 2019). For example, two students in the same school may have different levels of exposure to ethnic ingroup peers and ethnic diversity in their classrooms compared to school (Juvonen et al., 2018). In the same way, the broader friendship networks in schools and individual friendship ties can differ and evolve over time. As researchers studying school-based friendship networks, we can broaden and enrich our conception of ethnicity in the network literature by incorporating different school level variables that change over time (e.g., the degree to which a school's friendship network are more or less segregated based on ethnicity) to predict changes in friendship dynamics.

Limitations

Despite its contributions, this study had several limitations. First, because I was particularly interested in the longitudinal effects of same-ethnic friendship preference and how the ethnic context and ethnicity moderates these associations, latent growth curve modeling was used rather than social network analysis. Because of this, I was not able to control for network mechanisms that may be contributing to greater same-ethnic friendships. For example, the tendency to become friends with friends of friends can lead to greater same-ethnic friendships over time; such processes do not reflect preferences (e.g., Moody, 2001). Thus, same-ethnic friendship preference may be overestimated in this study.

Second, classroom composition focuses on ethnic ingroup representation as opposed to ethnic diversity (Juvonen et al., 2018). In doing so, I do not account for the number of different ethnic groups present nor the particular ethnic groups. Relatedly, I do not have measures of academic tracking. The phenomenon of racialized tracking is multidimensional and requires moving beyond ingroup over- and underrepresentation. The degree of segregation of outgroups within classes must also be taken into account. For example, does underrepresentation in honors courses for African American and Asian youth lead to greater same-ethnic friendship preferences if outgroups in those classes are more ethnically diverse? Do these associations depend on the relative representation of a particular ethnic outgroup (e.g., Whites vs. Latinos)? These questions are important for future studies to consider.

Third, I focus on the school and academic classroom contexts, but did not examine extracurricular activities. Extracurricular activities have been shown to be an especially important way schools can promote cross-ethnic friendships (Knifsend & Juvonen, 2016; Moody 2001). However, to the degree that extracurricular activities are segregated and racialized which

is often the case (Clotfelter, 2002), similar patterns in friendships as those found with academic classes may occur. Thus, future research can extend this work to that context.

Finally, the same-ethnic friendship measure was limited in that it does not measure whether friendships were with peers in academic classes. Nor does it capture the stability of each unique friendship tie. Having same-ethnic friendships may reflect a need to seek out support and solidarity regardless of whether that friend was in academic classes, or maybe especially when that friend shared those classes. An important question for future research is how the organization of youth in schools might affect the relational stability and quality of same-ethnic friendships both in and outside of the classroom (Lessard et al., 2019).

Conclusion

Beyond availability, friendship preferences in middle schools are shaped by both the school and classroom ethnic context. Having fewer same-ethnic peers in schools that are less ethnically diverse, and being underrepresented in classrooms where one is academically stereotyped can heighten the salience of ethnic group membership and status, leading to greater same-ethnic friendship preference (“hunkering” down). The results suggest that reducing the salience of ethnicity and racial hierarchies should reduce youths’ preferences for same-ethnic friendships. In particular, school ethnic diversity (contexts where there are many different, relatively equally represented outgroups present) could buffer marginalization and a need to hunker down at least at the start of middle school when social networks are beginning to form. However, ethnic diversity is not enough to reduce preferences for same-ethnic friendships over time and can in fact exacerbate them. Understanding the meaning of school ethnic diversity and its association with perceptions of the ethnic climate and social and academic hierarchies will be important future directions in shedding light on the ways ethnic diversity in both schools and

classrooms can affect intergroup relations (Graham & Morales-Chicas, 2015; Saenz, Ngai, Hurtado, 2007; Cappella et al., 2013, 2017).

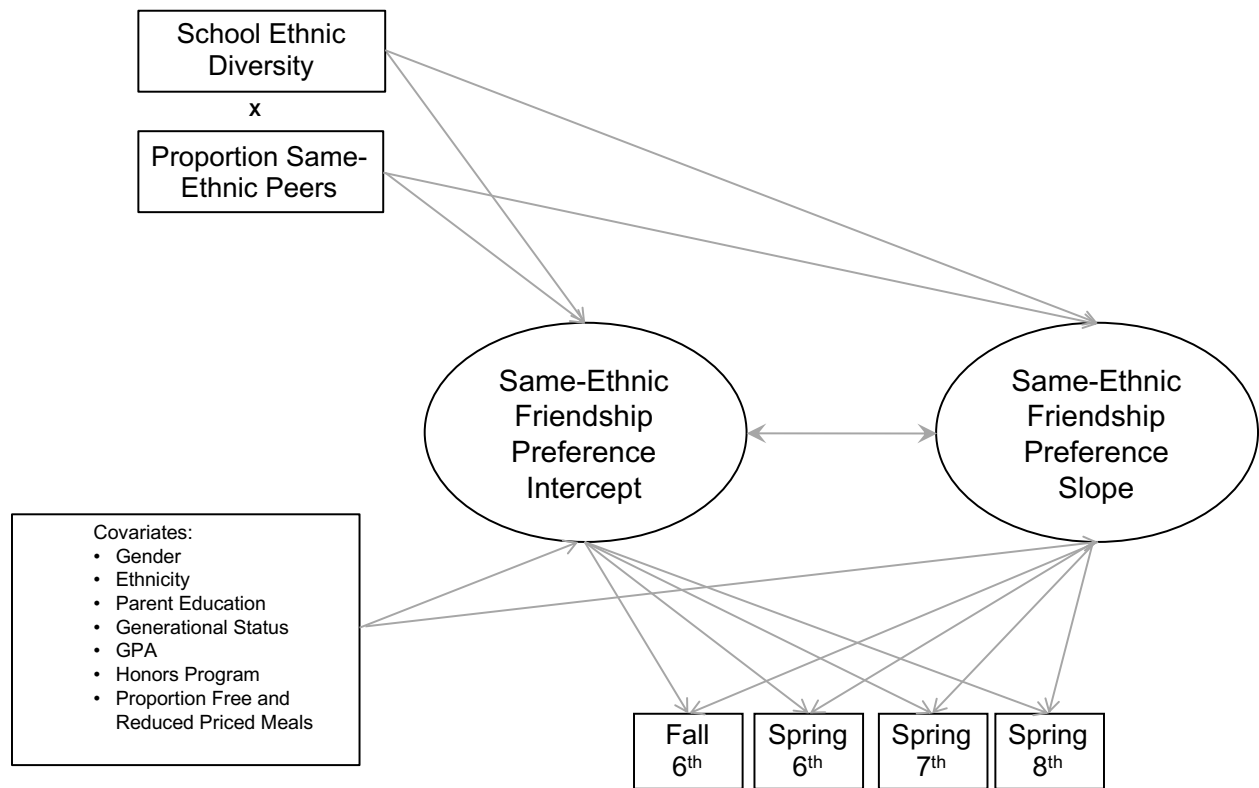
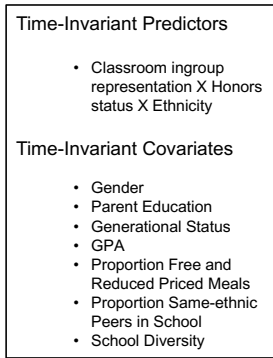


Figure 1. Conceptual model of aim 1.

Between-Person Effects



Within-Person Effects

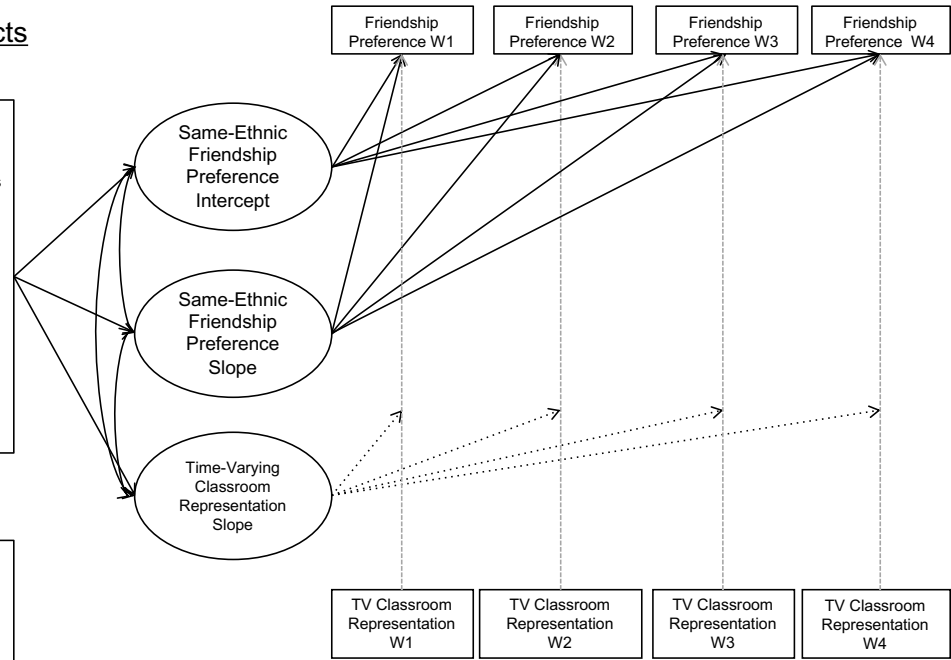
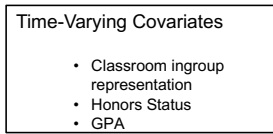


Figure 2. Conceptual mode of aim 2.

Table 1.

Intercorrelations and Descriptive Statistics for Main Study Variables.

	1	2	3	4	5	6	7
1. Same Ethnic Friendship Preference F 6th Gr	–						
2. Same Ethnic Friendship Preference S 6th Gr	.59**	–					
3. Same Ethnic Friendship Preference F 7th Gr	.44**	.49**	–				
4. Same Ethnic Friendship Preference F 8th Gr	.32**	.41**	.54**	–			
5. School Ethnic Diversity	-.15**	-.18**	-.15**	-.14**	–		
6. School Proportion Same-ethnic Peers	.20**	.19**	.19**	.16**	-.01	–	
7. Time Invariant Ethnic Ingroup Representation in Academic Classes	.28**	.29**	.27**	.24**	-.06**	-.16**	–
N	4,227	4,213	3,732	3,373	4,511	4,576	4,381
Mean	1.01	1.08	1.21	1.38	-0.01	0.01	0.00
Std. Deviation	4.23	4.06	4.08	4.04	0.08	0.16	0.13

Note. * $p < .05$ ** $p < .01$ *** $p < .001$.

Table 2.

Coefficients From Final Conditional Latent Growth Model Examining School Ethnic Context.

Parameter	Same-Ethnic Friendship Preference
	Standard. (S.E.)
<i>Predicting Intercept Factor</i>	
Gender	.65 (.15)***
Parent Education	-.09 (.05)
Generational Status	.49 (.28)
African American	-.76 (.38)*
Asian	.32 (.30)
Latino	-.01 (.27)
Overall GPA	-.19 (.10)
Overall Honors designation	-.08 (.32)
% Same-Ethnic Peers in School	4.76 (.92)***
School Diversity	-4.31 (1.26)**
School % Free/Reduced Meals	.03 (.01)***
School Diversity X % Same-Ethnic Peers	17.56 (2.04)*
<i>Predicting Slope Factor</i>	
Gender	-.18 (.06)**
Parent Education	-.01 (.03)
Generational Status	.02 (.09)
African American	.24 (.13)
Asian	.15 (.12)
Latino	.23 (.17)
Overall GPA	.02 (.08)
Overall Honors designation	-.02 (.12)
% Same-Ethnic Peers in School	-.49 (.34)
School Diversity	1.35 (.68)*
School % Free/Reduced Meals	.00 (.00)
School Diversity X % Same-Ethnic Peers	-4.22 (2.95)
<i>Time-Varying Controls</i>	
W2 GPA	.13 (.13)
W2 Honors designation	-.20 (.42)
W3 GPA	-.21 (.17)
W3 Honors designation	-.70 (.23)**
W4 GPA	-.8 (.11)
W4 Honors designation	.35 (.22)
Intercept	1.08 (.45)*
Slope	.02 (.27)
Intercept/Slope Covariance	-1.88 (.01)***
Intercept Variance	9.28 (.53)***
Slope Variance	1.45 (.11)***
$\chi^2(20, N = 3,901)$	93.14 ($p < .001$)
CFI	.99
RMSEA (90% CI)	.02 (.00, .02)

Note. * $p < .05$ ** $p < .01$ *** $p < .001$.

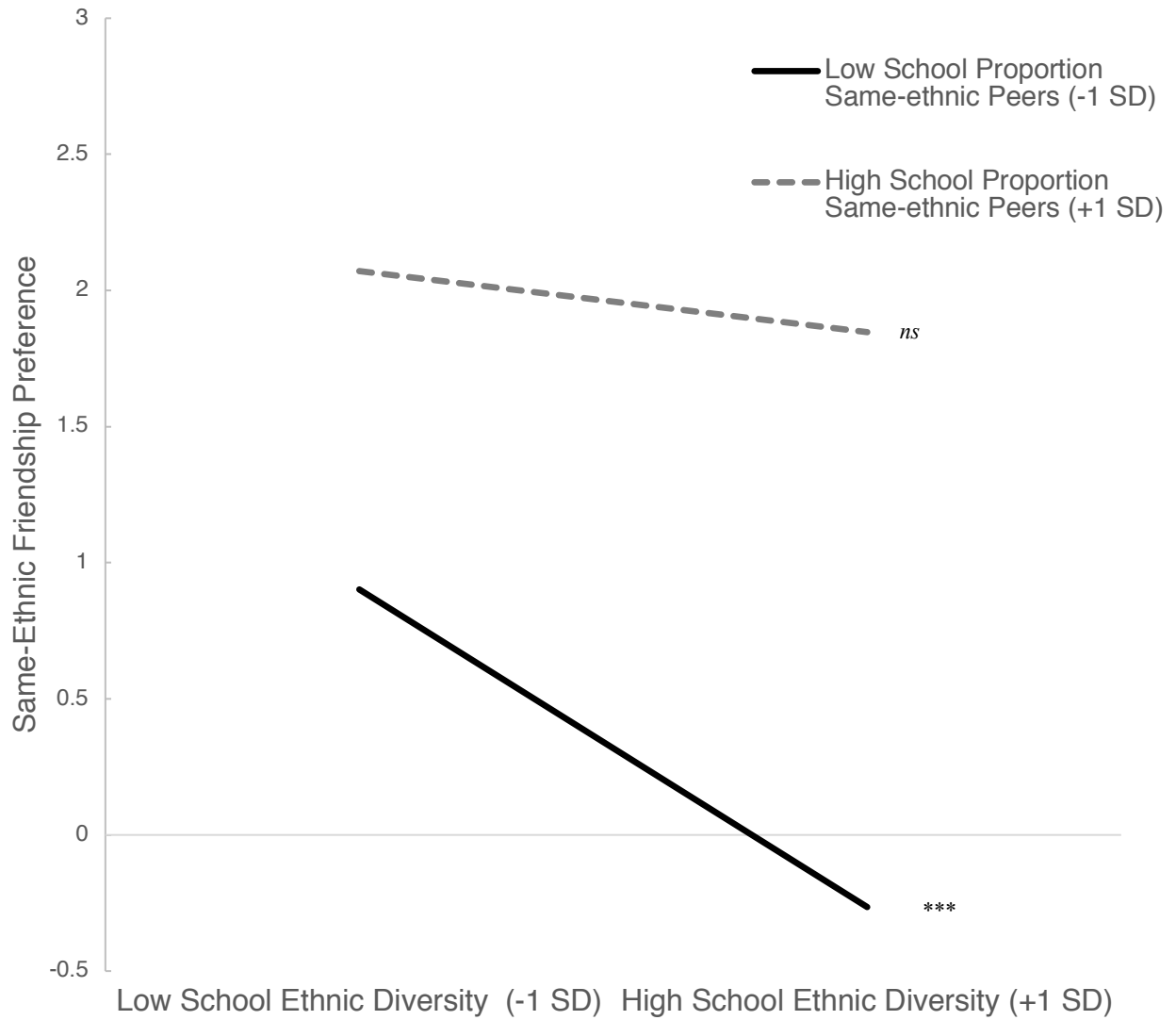


Figure 3. Interaction between school ethnic diversity and proportion same-ethnic peers in school predicting initial status of same-ethnic friendship preference. Note. * $p < .05$ ** $p < .01$ *** $p < .001$.

Table 3.

Coefficients From Final Latent Growth Model Examining Classroom Ethnic Context.

Parameter	Same-Ethnic Friendship Preference Standard. (S.E.)
<i>Predicting Intercept Factor</i>	
Gender	.57 (.14)***
Parent Education	-.08 (.06)
Generational Status	.41 (.31)
African American	.10 (.30)
Asian	.21 (.24)
Latino	-.39 (.28)
Overall GPA	-.20 (.13)
Overall Honors designation	-.17 (.69)
Ingroup Representation in Academic Classes	12.33 (1.63)***
Ingroup Representation in Academic Classes X African American	-1.77 (2.90)
Ingroup Representation in Academic Classes X Asian	-4.22 (2.07)*
Ingroup Representation in Academic Classes X Latino	-1.75 (2.36)
Ingroup Representation in Academic Classes X Honors	4.24 (2.90)
Honors X African American	2.60 (.74)***
Honors X Asian	-.20 (.91)
Honors X Latino	.65 (.91)
Ingroup Representation in Academic Classes X Honors X African American	8.44 (4.69)
Ingroup Representation in Academic Classes X Honors X Asian	-6.14 (5.34)
Ingroup Representation in Academic Classes X Honors X Latino	-5.41 (3.62)
% Same-Ethnic Peers in School	7.92 (.86)***
School Diversity	-6.35 (1.41)***
School % Free/Reduced Meals	.015 (.01)
<i>Predicting Slope Factor</i>	
Gender	-.18 (.07)*
Parent Education	-.02 (.03)
Generational Status	-.02 (.12)
African American	.27 (.15)
Asian	.22 (.10)*
Latino	.35 (.15)*
Overall GPA	.04 (.08)
Overall Honors designation	.13 (.39)
Representation in Academic Classes	-2.36 (1.17)*
Representation in Academic Classes X African American	2.08 (1.29)
Representation in Academic Classes X Asian	2.75 (1.43)
Representation in Academic Classes X Latino	1.69 (1.33)
Representation in Academic Classes X Honors	3.15 (1.64)
Honors X African American	-.12 (.44)
Honors X Asian	.44 (.54)
Honors X Latino	-.27 (.38)
Representation in Academic Classes X Honors X African American	-6.67 (2.51)***
Representation in Academic Classes X Honors X Asian	-10.91 (2.85)***
Representation in Academic Classes X Honors X Latino	-.64 (1.93)
% Same-Ethnic Peers in School	-.72 (.39)
School Diversity	1.89 (.62)**
School % Free/Reduced Meals	.01 (.00)
<i>Time-Varying Controls</i>	
Representation in Academic Classes	2.45 (.83)**
W2 GPA	.10 (.12)
W2 Honors designation	-.64 (.37)
W3 GPA	-.27 (.17)
W3 Honors designation	-.53 (.14)***
W4 GPA	-.16 (.13)
W4 Honors designation	.49 (.20)**

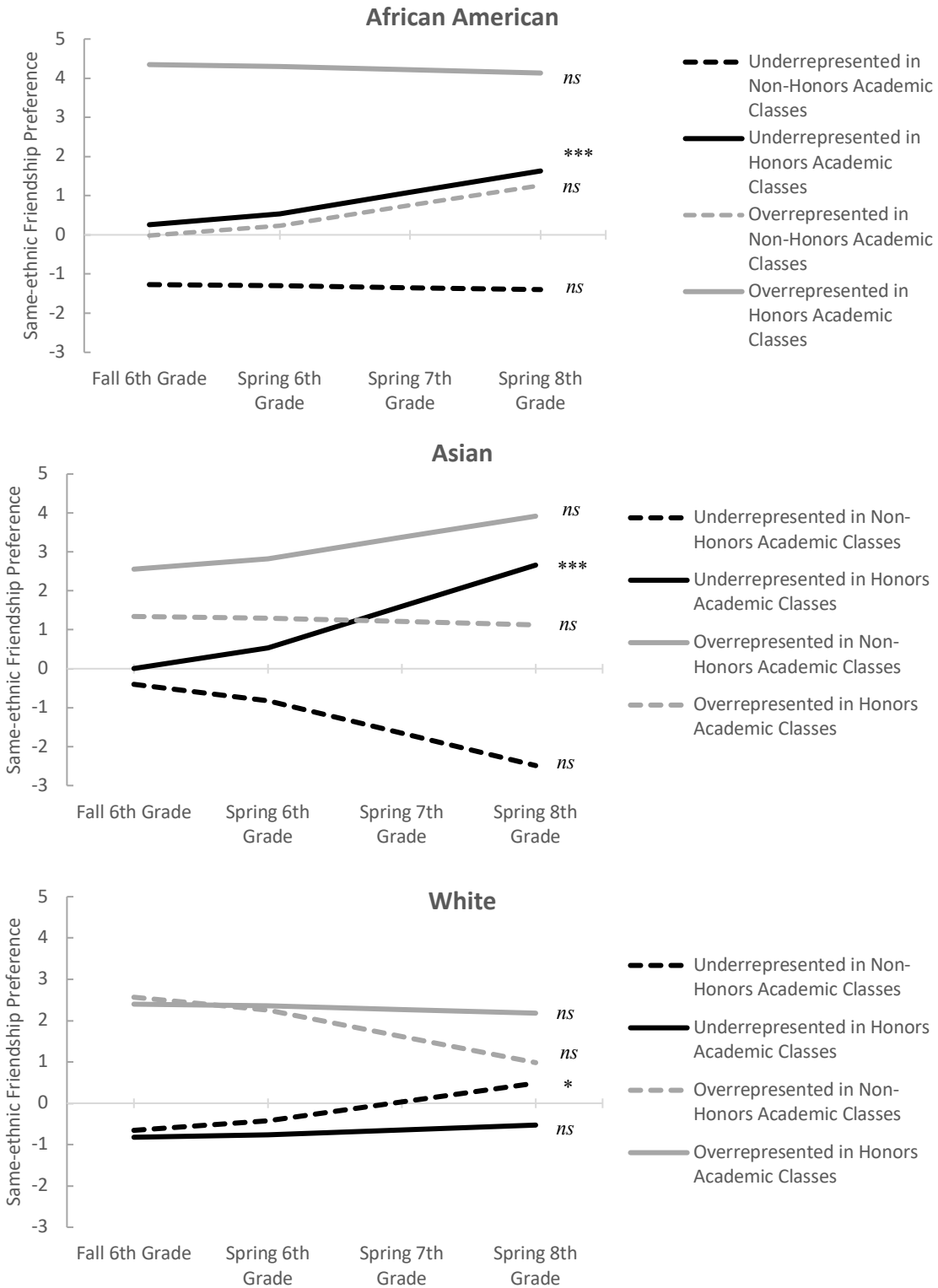


Figure 4. Interaction between ethnic ingroup representation in academic classes, honors, and ethnicity predicting slope of friendship preference. Note. * $p < .05$ ** $p < .01$ *** $p < .001$.

STUDY 2

Longitudinal Associations Between Ethnic Identity, Intergroup Attitudes, and Preference for
Same-Ethnic Friendships in Middle School

Longitudinal Associations Between Ethnic Identity, Intergroup Attitudes, and Preference for Same-Ethnic Friendships in Middle School

Although youth in multiethnic schools have opportunities to form cross-ethnic friendships, friendships during adolescence tend to be segregated by race (Moody, 2001). Study 1 examined the trajectory of same-ethnic friendship preference over time and indicated that friendships tend to become more segregated over time during middle school. Preference for same-ethnic friendships can result in the re-segregation of youth along ethnic lines, raising concerns about diminishing the benefits of interethnic contact in multiethnic schools for reducing prejudice and inequality (Pettigrew & Tropp, 2006). At the same time, preferring same-ethnic friendships can be viewed as both developmentally normative and beneficial for adolescents (Tatum, 2017). Indeed, the extent to which youth prefer same-ethnic friendships may depend on their emerging ethnic identity and feelings about their ingroup (e.g., Rivas-Drake et al., 2017; Wolfer & Hewstone, 2018). Adolescence marks a period in development associated with new needs and concerns regarding identity and belonging to social groups (Killen, Henning, Kelly, Crystal, & Ruck, 2007; Phinney, 1993). The present study examined whether the developmental trend in preferring more same-ethnic friendships during adolescence reflects greater ethnic identity and attitudes favoring ingroups, and whether preference for same-ethnic friendships also affects the development of ethnic identity and intergroup attitudes across the middle school years. Additionally, this study examined whether these associations vary by ethnicity and the proportion of same-ethnic peers in school.

Same-Ethnic Friendships and Ethnic Identity

The development of ethnic identity is an important task during adolescence. A strong ethnic identity has been shown to promote psychosocial and academic adjustment (Rivas-Drake

et al., 2014), and buffer against negative race-related experiences like discrimination (Chavous, Rivas-Drake, Smalls, Griffin, & Cogburn, 2008; Sellers & Shelton, 2003). In the U.S., race and ethnicity remain salient social categories that are central to how adolescents define themselves and relate to their peers (Graham & Echols, 2018). To the extent that adolescents choose their friends, preference for same-ethnic friendships may reflect this developing sense of self and social identity (Kiang, Peterson, & Tyson, 2011). Indeed, compared to cross-ethnic friendships, same-ethnic friendships have been shown to be uniquely related to ethnic identity (Graham et al., 2014). Not only do they provide a supportive context for exploring the meaning of their ethnic identity through shared experiences and cultures, same-ethnic friendships also offer validation, acceptance and support when facing race-related stressors (e.g., Erikson, 1968; Kao & Joyner, 2004; Kiang, Harter, & Whitesell, 2007; Phinney, 1990; Syed & Juan, 2012). Thus, preferring same-ethnic friendships can be developmentally beneficial, particularly for ethnic minority youth navigating racialized spaces (Tatum, 2017). Taken together, ethnic identity and friendships are likely bidirectional; preferring same-ethnic friends should strengthen or maintain a strong ethnic identity, and having a stronger ethnic identity could lead adolescents to prefer same-ethnic friends.

Cross-sectional evidence supports both hypotheses. Having a stronger ethnic identity has been associated with spending more time with same-ethnic peers and having more same-ethnic friendships (Ono, 2002; Phinney, Romero, Nava, & Huang, 2001; Sears, Fu, Henry, & Bui, 2003). Likewise, having more same-ethnic friendships has been associated with a stronger ethnic identity, presumably because of implicit and explicit socialization processes. For example, based on self-reported ethnic composition of friendships, having mostly same-ethnic or both same- and cross-ethnic friends was related to greater ethnic centrality (importance of group

membership) compared to having mostly cross-ethnic friendships (Kiang et al., 2011). Less is understood about the longitudinal association between ethnic identity and same-ethnic friendships. Some studies find that same-ethnic friendships have an effect on ethnic identity development. For instance, in a longitudinal study of adolescents, having a higher proportion of same-ethnic friends was associated with higher levels of ethnic-racial belonging and exploration over time (Kiang, Witkow, Baldelomar, & Fuligni, 2010). More recent work also indicates that the proportion of same-ethnic friends is positively related to centrality over time, even controlling for the current proportion of same-ethnic/racial friends (Douglass, Mirpui, & Yip, 2017). However, others have found that ethnic identity predicts friendship selection. In a short-term longitudinal study with multiethnic youth in the United Kingdom, Rutland et al. (2012) found that a stronger ethnic identity, and lower national English identity, predicted a greater proportion of same-ethnic friends among early adolescents six months later. Evidence for the reverse direction of friendships predicting ethnic identity was not found.

The longitudinal findings suggest the nature of the associations between ethnic identity and friendships is reciprocal. However, few studies have tested this. Rivas-Drake et al. (2017) used cross-lagged models to examine the effect of ethnic/racial identity (exploration and resolution) on selection of diverse friendships. It was hypothesized that youth who have explored and were more secure in their ethnic/racial identity (ERI) may actually have more ethnically diverse friendship networks. Partial support was found with boys who had stronger ERI selecting more diverse friends, but not girls. A growing literature utilizing social network analysis (SNA) has examined selection and influence processes, focusing on whether youth select friends who are similar to themselves in levels of ethnic identity, and whether friends' levels of ethnic identity influence youths' own ethnic identity over time (Leszczensky & Pink,

2019; Jugert, Leszczensky, & Pink, 2019; Rivas-Drake et al., 2017; Santos, Kornienko, Rivas-Drake, 2017). Overall, findings suggest friends become more similar in ethnic identity due to influence effects, over and above selecting friends with similar levels of ethnic identity and who share the same ethnic group. However, same-ethnic preference in friendship selection remained significant in each study. Results from the studies using SNA show there are many mechanisms that lead to friendship choices and that a stronger ethnic identity does not necessarily increase preference for same-ethnic friendships.

Based on the existing empirical evidence, it remains unclear how changes in same-ethnic friendship preference and ethnic identity development are related during middle school. With the exception of studies using SNA, prior research has typically used subjective or objective ethnic composition of friendship ties (e.g., proportion of same-ethnic friends, friendship diversity) which does not account for the opportunity structures for forming same- or cross-ethnic friendships (i.e., proportion of grade-level same- and cross-ethnic peers). The present study used a measure of same-ethnic preference for friendships that captures the likelihood of a friendship between members in a same-ethnic dyad relative to a friendship in a cross-ethnic dyad and accounts for the distribution of possible friendship ties (Moody, 2001; Wilson & Rodkin, 2011). Therefore, the measure is not dependent on the number of same- and cross-ethnic friends or the total number of friends nominated. Greater preference for same-ethnic friendships indicates that an adolescent is more likely to nominate a same-ethnic friend based on availability. In line with previous research, I hypothesized that increases in preference for same-ethnic friendships would predict greater ethnic identity development during middle school given that increased segregation in friendship networks could create a social context in which ethnicity

becomes salient (Moody, 2001). Such relations would reflect the normative tendency and benefits of having same-ethnic friendships in multiethnic contexts (Tatum, 2017).

It is less clear whether youth who have high ethnic identity indeed prefer same-ethnic friends and thus progressively segregate from cross-ethnic peers during middle school. On the one hand, youth who place greater importance on ethnic identity should show more ingroup positive regard (Hewstone, Rubin, & Willis, 2002; Tajfel & Turner, 1986) and thus, greater same-ethnic preference in friendship choices. On the other hand, having a stronger identity may lead to less same-ethnic preference in friendships among adolescents because of their greater self-confidence and comfort in their social identity (Rivas-Drake et al., 2017). Thus, a stronger ethnic identity may not necessarily imply preference for same-ethnic friendships and in some cases, may even be unrelated to friendship selection or to preference for cross-ethnic friends. Given these competing hypotheses, the present study explored the effect of ethnic identity on the development of same-ethnic friendship preference.

Finally, the associations between friendships and ethnic identity may vary by the school ethnic context and possibly ethnicity. However, few studies have addressed these ethnic context issues or included large enough samples to test for ethnicity effects. I drew from an ethnically diverse sample of youth that included four of the major pan-ethnic groups (African American, Asian, Latino, and White) who attended schools that systematically varied in ethnic diversity. Given that ethnic identity and having same-ethnic friendships may be important for ethnic minority youth in multiethnic schools (Tatum, 2017), and ethnic minority youth show higher levels of ethnic identity compared to Whites (Phinney & Alipuria, 1990), it could be that these associations are stronger for ethnic minority youth. Other research suggests that White youths' racial/ethnic identity may be especially dependent on the context, becoming more important

when Whites find themselves in ethnically diverse schools or in relatively smaller numbers compared to ethnic minorities (French, Seidman, Allen, & Aber, 2006; Perry, 2002). Similarly, ethnic identity has also been shown to be stronger for youth in the numerical minority who spent more time with same-ethnic peers (Douglass et al., 2017; Yip, Douglass, & Shelton, 2013). Thus, I hypothesized that the strength of the longitudinal associations between same-ethnic friendships and ethnic identity would depend on the proportion of same-ethnic peers in school, such that as the proportion of same-ethnic peers decreases, the associations would be stronger.

Same-ethnic Friendships and Intergroup Attitudes

While part of preference for same-ethnic friendships may be rooted in adolescents' developing ethnic identity, from a contact perspective, such preferences could contribute to greater ethnic segregation and have negative consequences for intergroup attitudes (Allport, 1954). A significant body of research supports contact theory, indicating that contact between children and adolescents from different social groups reduces prejudice (e.g., Feddes, Noack, & Rutland, 2009; Pettigrew & Tropp, 2006). Friendships are an especially potent form of contact and are more strongly predictive of reductions in prejudice than other forms of intergroup contact (Pettigrew 1998; Davies et al., 2011). Contact theory, however, does not offer clear hypotheses about how preferring same-ethnic friendships might affect intergroup attitudes. Social identity theory (Tajfel & Turner, 1986) posits that the need for a positive social identity leads to a tendency to form group solidarity, accentuating differences rather than similarities with outgroup members, and to the development of intergroup biases through group comparisons and viewing one's group more favorably (Hewstone et al., 2002). While ingroup biases do not necessarily imply outgroup derogation or prejudice (Allport, 1954; Brewer, 1999; Tajfel & Turner, 1986), it can be hypothesized that preferring same-ethnic friendships as a form of ingroup solidarity can

lead to heightened ingroup-outgroup category salience and boundaries (i.e., *us vs. them* distinctions). This in turn may be associated with attitudes favoring one's ethnic ingroup over time such as showing more negative attitudes toward outgroups compared to ingroups.

Acknowledging that the positive effects of outgroup contact on prejudice reduction may be due to less ingroup contact, Levin, van Laar, & Sidanius (2003) examined both ingroup and outgroup contact on college students' friendships over time. Findings revealed those who showed more attitudes favoring ingroups had more same-ethnic friendships in subsequent years, controlling for pre-college friendships.

No studies have examined the effects of intergroup attitudes on same-ethnic friendship preference. Prior research on contact theory suggests that higher levels of ingroup bias and prejudice predicts fewer cross-ethnic friendships and interest in outgroups (Davies et al., 2011; Hamm et al., 2005; Jacoby-Senghor, Sinclair & Smith, 2015; Jugert et al., 2011; Stark, 2015; Wolfer & Hewstone, 2018). Furthermore, longitudinal studies find evidence for the bidirectional dynamic nature of the contact-attitude association (Binder et al., 2009; Levin et al., 2003; Swart, Hewstone, Christ & Voci, 2011). Although the focus of this literature is on cross-ethnic friendships, given that the inverse of the measure of same-ethnic friendship preference signifies a preference for cross-ethnic friendships, I hypothesize that greater affective attitudes favoring one's ethnic ingroup will lead to greater preference for same-ethnic friendships. The present study will use an affective measure of intergroup attitudes given its stronger relationship with contact and prejudice than cognitive measures (Binder et al., 2009; Levin et al., 2003; Tropp & Pettigrew, 2005).

Like friendships and ethnic identity, the interrelated nature of preference for same-ethnic friendships and attitudes favoring one's ethnic ingroup likely depends on the school ethnic

context. The contact-prejudice relationship tends to be weaker for members from minority status groups than for majority status groups (Pettigrew & Tropp, 2005). Ethnicity, however, is often confounded with numerical group size which is related to status and power. Group size has been shown to affect ingroup bias, with individuals who are members of numerical minority groups showing greater ingroup bias (Hewstone et al., 2002) presumably because the numerical distinctiveness results in higher salience of ingroup membership. The present study draws from a sample where ethnicity and group size are not confounded. I hypothesize that the bidirectional association between same-ethnic friendship preference and attitudes favoring one's ingroup will be stronger for ethnic minority youth and for youth who have fewer same-ethnic peers in school.

The Current Study

The current study examined the dynamic associations between trajectories of adolescents' preference for same-ethnic friendships and ethnic identity, and separately, preference for same-ethnic friendships and affective attitudes favoring one's ethnic ingroup. Using parallel process latent growth curve models, this study was guided by three overarching research questions: (1) Do ethnic identity and affective attitudes favoring one's ethnic group change over time, and are ethnic ingroup representation and ethnicity linked to differences in initial levels of each construct and the rate at which each changes over the course of middle school? (2) How are the trajectories of preferences for same-ethnic friendships interrelated with trajectories of ethnic identity, and separately, with affective attitudes over the course of middle school? (3) Do ethnic ingroup representation and ethnicity moderate the relation between same-ethnic friendship preference and ethnic identity, and separately, same-ethnic friendship preference and affective attitudes favoring one's ethnic ingroup? I hypothesized that same-ethnic friendship preference at the start of middle school would predict greater ethnic identity development over time. Given

the mixed evidence from past research, it was unclear whether ethnic identity would predict increases in same-ethnic friendship preference and therefore these associations were exploratory. I further hypothesized that same-ethnic friendship preference at the start of sixth grade would predict greater attitudes favoring ingroups and that attitudes would predict increases in same-ethnic friendship preference. Finally, I expected that these associations would be stronger for ethnic minority youth and for all youth who have fewer same-ethnic peers in school.

Method

The participants and procedure for Study 2 are the same as Study 1. The following measures are also the same as Study 1: gender, ethnicity, parent education, generational status, same-ethnic friendship preference, proportion same-ethnic peers in school, GPA, academic honors designation, proportion free and reduced priced meals, and school ethnic diversity. Outcome variables of interest were measured over time, but at different waves. Ethnic identity was measured at three time points (Spring of 6th through Spring of 8th grade) and attitudes favoring one's ingroup and same-ethnic friendship preference were measured at four time points (Fall of 6th through Spring of 8th grade).

Measures

Outcomes.

Ethnic identity. Three items from the Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992) assessing subjective sense of membership in one's ethnic group were used to measure private regard (e.g., "*I feel like I really belong to my ethnic group*"). Participants rated each item on a 5-point scale (0 = *definitely no!*, 4 = *definitely yes!*). Ethnic identity was measured at only three time points (spring of 6th through spring of 8th grade) ($\alpha = .72 - .75$).

Affective attitudes favoring ingroups. Affective attitudes favoring ingroups were computed using 16 items assessing participants' feelings toward ethnic ingroup and outgroup members. Participants were asked to rate on a 5-point scale (1 = *no way!*, 5 = *for sure yes!*) whether they liked, trusted, respected and felt comfortable around kids from four different ethnic groups (African American, Asian, Latino, and White youth). Following methods outlined by Knifsend and Juvonen (2014), affective attitudes favoring ingroups of each participant was calculated by subtracting the average of the 12 items for three ethnic outgroups from the average of 4 items for members of one's own ethnic ingroup. Thus, positive scores indicate greater ingroup bias. Affective attitudes favoring one's ingroup were measured at all four time point ($\alpha = .87 - .93$).

Analytic Plan

Analytic Plan

The data were analyzed using a series of latent growth curve models (LGCMs), including the multivariate change or parallel process model, to estimate both inter- and intraindividual differences in change of same-ethnic friendship preference, ethnic identity and affective attitudes favoring one's ethnic ingroup, and the interrelated associations between constructs (MacCallum, Kim, Malarkey, & Kiecolt-Glaser, 1997; McArdle & Epstein, 1987). All analyses were conducted using Mplus (Muthén & Muthén, 1998-2012, version 7.3). Given that students in this sample were nested within middle schools, the CLUSTER function was used. This function accounts for clustering and produces correctly adjusted standard errors in the model estimations using a sandwich estimator. The current study also included some missing data. The Mplus estimation procedure handles missing data through full-information maximum likelihood (FIML), which allows for the inclusion of all available data in the analyses. Missing data are a

source of concern for longitudinal studies and FIML is one of the recommended alternative estimation strategies for mean and covariance structure modeling as it allows for generalization of results and the use of all available data (Enders, 2001).

In addition to the adjusted χ^2 test, the comparative fit index (CFI; Bentler, 1990) and root mean squared error of approximation (RMSEA; Steiger, 1998) were used to evaluate overall model fit (Hu & Bentler, 1998). A nonsignificant χ^2 , a CFI above .95 (Bentler, 1990), and the RMSEA below .05 with relatively small standard errors (MacCallum, Browne, & Sugawara, 1996) indicate the model adequately describes the relationships observed in the data. All χ^2 model difference testing was done using the scaling correction factor.

Results

The intercorrelations, means, and variances for the three processes in the model are presented in Table 1. The intercorrelations reveal that ethnic identity, attitudes favoring ingroups, and same-ethnic friendship preference were moderately stable over the course of middle school. Furthermore, all three constructs were significantly and positively correlated.

Ethnic Identity

Unconditional latent growth curve model.

Beginning with ethnic identity, the first research question (RQ1) asked: *Does ethnic identity change over time, and are proportion same-ethnic peers in school and ethnicity linked to differences in initial levels of each construct and the rate at which each changes over the course of middle school?* An unconditional LGCM was estimated for ethnic identity in order to test the growth patterns over time, and to test whether there was a significant amount of individual variability around the average trajectory. Time-specific measures were used to estimate the underlying growth trajectory characterized by the unobserved latent factors. The first latent

factor represented the trajectory's intercept or initial status at the fall of 6th grade. Factor loadings for this latent factor were set to 1 to represent the starting point of the trajectory. The second latent factor for each process represented the trajectory's slope or rate of change. To define the slope as linear, the factor loadings were set to 0, .5, 1.5, and 2.5. When fitting LGCMs, it is also important to consider and test for the possibility of nonlinear trajectories (Bauer & Cai, 2009). To do this, I estimated a freed loading model in which only two parameters for the slope factor are fixed with time-codings. Chi-square difference tests were computed to compare model fit; however, model fit worsened for each outcome suggesting linear change in each.

The unconditional model for ethnic identity fit the data well, $\chi^2(1, N = 4,481) = 5.78, p = .02$; CFI = 1.00; RMSEA=.03, 90% CI [.01, .06]. On average, the mean level of ethnic identity in the Spring of 6th grade was 3.20. On average, adolescents' ethnic identity declined over time ($b = -.02, p < .05$) (see left column of coefficients in Table 2). However, there was significant variation in initial status and growth indicating that adolescents start at different levels of ethnic identity ($b = .25, p < .001$) and grow subsequently at different rates ($b = .05, p < .001$). The initial level of ethnic identity in the Spring of 6th grade was negatively correlated with its slope factor ($b = -.04, p < .001$) revealing that adolescents who start higher in ethnic identity showed greater decreases than those who started with a lower ethnic identity. This may capture a "ceiling effect" given those who report higher initial levels have a greater opportunity to decrease over time.

Conditional model: Examining differences by ethnicity and proportion same-ethnic peers in school.

Conditional models were estimated to account for individual variation in initial status and the growth trajectories with the inclusion of predictors and covariates. Time-invariant covariates include demographic characteristics and predictors of interest, including proportion same-ethnic peers in school and ethnicity (see Study 1). Time-varying covariates included academic honors designation and GPA. The effect of the interaction between proportion of same-ethnic peers in school and ethnicity were added. Covariates, predictors, and interaction terms were incorporated into the model by giving each an effect on the intercept and slope factors.

To examine whether each trajectory's individual variation in the latent growth factors could be explained by ethnicity and proportion same-ethnic peers in school, both were regressed on the intercept and slope factors in each of the separate LGCMs along with all covariates. The conditional models are shown in the left column of Table 2. The conditional model for ethnic identity fit the data well $\chi^2(20, N = 3,901) = 28.82, p = .09$; CFI = 1.00; RMSEA = .01, 90% CI [.00, .02]. As expected, ethnic minority youth had higher initial levels of ethnic identity compared to White youth in the Spring of 6th grade (African American: $b = .34, p < .001$; Asian: $b = .23, p < .001$; Latino: $b = .30, p < .001$). However, there were no ethnic differences in rates of change (African American: $b = .04, p = .12$; Asian: $b = -.04, p = .17$; Latino: $b = -.03, p = .14$). The proportion of same-ethnic peers in school was not related to initial levels ($b = .11, p = .08$) or change ($b = .08, p = .21$) in ethnic identity.

Multivariate LGCM.

To test the second research question (RQ2: *How are the trajectories of preferences for same-ethnic friendships interrelated with trajectories of ethnic identity*), I examined how the initial status and the growth trajectories of each process were interrelated using a two-factor parallel process or multivariate change LGCM. The parallel process LGCM is an extension of

the basic LGCM to study multivariate change by simultaneously modeling multiple growth curves (MacCallum et al., 1997). To evaluate the cross-sectional and dynamic associations between ethnic identity and same-ethnic friendship preference over the course of middle school, each of the intercept factors from the previously estimated conditional models was allowed to covary as well as each of the slope factors. Additionally, I correlated the intercepts and slopes within processes, and allowed the intercepts of each process to predict the other (i.e., intercept of friendship preference predicted the slope of ethnic identity and vice versa).

The final parallel process model with ethnic identity and same-ethnic friendship preference fit the data well: $\chi^2 (57, N = 4,016) = 430.57, p < .001$; CFI = .90; RMSEA = .04, 90% CI [.04, .05]. As shown in Figure 1, in the Spring of 6th grade, ethnic identity and same-ethnic friendship preference were positively linked ($b = .14, p < .001$). Additionally, the slopes of both ethnic identity and friendship preference were significantly and positively related ($b = .11, p < .01$) indicating that adolescents characterized by steeper increases in same-ethnic friendship preference over time tended to be those who experienced less steep declines in ethnic identity. Of particular interest were the direct effects between early levels of each construct (intercepts) and the growth trajectory of the other (slopes). The intercept of same-ethnic friendship preference significantly predicted the slope of ethnic identity revealing that greater same-ethnic friendship preference predicted steeper increases in ethnic identity over time ($b = .11, p < .001$). However, the effect of the intercept of ethnic identity predicting change in friendships was not significant ($b = .03, p = .28$).

Moderating effect of ethnicity and same-ethnic peers in school.

To examine the third research question (RQ3: *Do ethnicity and same-ethnic peers in school moderate the association between ethnic identity and same-ethnic friendship preference, I*

tested whether ethnicity and proportion same ethnic peers in school moderate the regression paths from the intercept to the slope by adding interaction terms and using Wald tests within unconstrained multiple group models. I began with testing each of the 2-way interactions between each intercept and ethnicity and separately between each intercept and proportion same-ethnic peers predicting the opposite slope factor. I then tested the 3-way interaction between the intercept of each factor, ethnicity, and proportion same-ethnic peers in school.

Beginning with the interaction between the intercept factors and ethnicity, Wald tests revealed that the effects of the intercept of same-ethnic friendship preference on the slope for ethnic identity were significantly different for ethnic minority youth compared to White youth (African American vs. White: Wald $\chi^2[1] = 6.64, p < .01$; Asian vs. White: Wald $\chi^2[1] = 4.37, p < .05$; Latino vs. White: Wald $\chi^2[1] = 4.37, p < .05$). For ethnic minority youth, the intercept of same-ethnic friendship preference significantly predicted the slope of ethnic identity such that those who showed greater same-ethnic friendship preference in the Spring of 6th grade also tended to show steeper increases in ethnic identity development over the course of middle school. The effect was non-significant for White youth ($b = .03, p = .28$).

Turning to the effect of the intercept of ethnic identity predicting the slope of same-ethnic friendship preference, Wald tests revealed that there was a significant difference between Asians and all other youth (African American vs. Asian: Wald $\chi^2[1] = 3.24, p < .05$; Latino vs. Asian: Wald $\chi^2[1] = .01, p < .93$; White vs. Asian: Wald $\chi^2[1] = 4.37, p < .05$). For Asians, greater ethnic identity at the start of middle school predicted steeper increases in same-ethnic friendship preference over time ($b = .10, p < .001$). This effect was non-significant for all youth except Asians. However, this effect was conditioned on proportion same-ethnic peers in school. Multiple group analysis revealed that the two-way interaction between the intercept of ethnic

identity and proportion same-ethnic peers in school predicting the slope of friendship preference was significantly different for Asian youth (African American vs. Asian: Wald $\chi^2[1] = 3.24, p < .05$; Latino vs. Asian: Wald $\chi^2[1] = .01, p < .93$; White vs. Asian: Wald $\chi^2[1] = 4.37, p < .05$). Specifically, only Asian youth showed the significant interaction between the intercept of ethnic identity and proportion same ethnic peers in school predicting the slope of friendship preference ($b = -1.45, p < .05$). Tests of simple slopes revealed that Asian youth who had high ethnic identity at the start of middle school showed steeper increases in same-ethnic friendship preference over time, especially when they had fewer same-ethnic peers in school ($b = 3.40, p < .01$). The slopes were non-significant for all other groups.

In summary, same-ethnic preference at the start of middle school predicted less steep declines in ethnic identity over time for ethnic minority youth, but not for White youth. Ethnic identity at the start of middle school predicted steeper increases in same-ethnic friendship preference only for Asians with fewer same-ethnic peers in school.

Attitudes Favoring Ethnic Ingroups

Unconditional latent growth curve model.

Turning next to attitudes favoring ethnic ingroups, the unconditional LGCM fit the data well ($\chi^2 (5, N = 4,548) = 23.58, p < .001$; CFI = .99; RMSEA = .03, 90% CI [.02, .04]). Like ethnic identity, the overall sample was characterized by a decreasing trajectory for affective attitudes favoring ingroups ($b = -.62, p < .001$) and showed significant levels of inter-individual variation in both initial levels ($b = .22, p < .001$) and rates of change ($b = .02, p < .05$). The initial level of affective attitudes favoring ingroups in the Fall of 6th grade was negatively correlated with its slope factor ($b = -.22, p < .05$) revealing that adolescents who start higher in

attitudes favoring ingroups showed greater decreases than those who started with lower attitude levels.

Conditional model: Examining differences by ethnicity and proportion same-ethnic peers in school.

The conditional model for attitudes favoring ingroups also fit the data well $\chi^2(45, N = 3,951) = 121.87, p < .001$; CFI = .93; RMSEA = .06, 90% CI [.06, .07]. Asian youth showed significantly higher attitudes favoring ingroups in the Fall of 6th grade ($b = .30, p < .001$). There were no other ethnic differences (see right column of Table 2). However, ethnic minority youth showed less steep declines in attitudes favoring ingroups over time compared to White youth (African American: $b = .56, p < .001$; Asian: $b = .50, p < .001$; Latino: $b = .57, p < .001$). Proportion of same-ethnic peers in school was not related to initial levels of attitudes favoring ingroups ($b = .11, p = .20$) but having more same-ethnic peers in school predicted steeper declines in attitudes favoring ingroups ($b = -.11, p < .05$).

Multivariate LGCM.

Turning to the multivariate model for attitudes favoring ethnic ingroups and same-ethnic friendship preference, the final model fit the data well: $\chi^2(67, N = 3,903) = 1144.48, p < .001$; CFI = .90; RMSEA = .06, 90% CI [.06, .07]. As shown in Figure 2, in the Fall of 6th grade, attitudes and same-ethnic friendship preference were positively linked ($b = .26, p < .001$). However, the slope factors were not significantly intercorrelated ($b = .02, p = .08$) indicating that adolescents' trajectories of each construct were not related after controlling for initial correlations and the regression paths. The crossed effects of the regression paths between the intercepts and slopes of each construct revealed that higher levels of initial attitudes favoring ethnic ingroups significantly predicted steeper increases in same-ethnic friendship preference

over time ($b = .47, p < .001$). However, initial levels of same-ethnic friendship preference were not significantly related to developmental change in attitudes favoring ingroups ($b = .01, p = .37$).

Moderating effect of ethnicity and same-ethnic peers in school.

Multiple group analyses revealed significant ethnic differences in the regression paths. Specifically, Wald tests showed that the effects of the intercept of attitudes favoring ingroups on the slope of same-ethnic friendship preference for ethnic minority youth were significantly different from White youth (African American vs White: Wald $\chi^2[1] = 6.64, p < .01$; Asian vs White: Wald $\chi^2[1] = 4.37, p < .05$; Latino vs White: Wald $\chi^2[1] = 4.37, p < .05$). All ethnic minority youth showed significant effects of the intercept of attitudes favoring ingroups on the slope of same-ethnic friendship preference such that youth who showed greater attitudes favoring ingroups in the Fall of 6th grade showed steeper increases in same-ethnic friendship preference across middle school (African American: $b = .37, p < .05$; Asian: $b = .49, p < .05$; Latino: $b = 1.09, p < .05$). This effect was non-significant for White youth ($b = .18, p = .53$). There were no other ethnic differences. Furthermore, these associations did not vary by proportion same-ethnic peers in school.

In summary, same-ethnic friendship preference in the Fall of 6th grade did not predict change in attitudes favoring ingroups. Rather, attitudes favoring ingroups in the Fall of 6th grade positively predicted steeper increases in same-ethnic friendship preference for ethnic minority youth but not White youth.

Discussion

The present study extends the current friendship literature by examining the longitudinal associations between same-ethnic friendship preference, ethnic identity, and intergroup attitudes

among an ethnically diverse sample of early adolescents, and whether these associations varied by ethnicity and the proportion of same-ethnic peers in school. I first assessed the overall growth patterns in each construct and differences in trajectories by ethnicity and proportion same-ethnic peers in school. Although there was significant individual variability, early adolescents from this study were positive about their ethnic identity in the Spring of 6th grade and showed a slight decline in ethnic identity during the middle school years reflecting a degree of instability and uncertainty during this time of understanding what it means to be a member of their ethnic group. Developmental research indicates that early adolescents can be ambivalent and unstable in their ethnic identity, but become more secure and committed by high school and college (Phinney & Alipuria, 1990; Phinney, Ferguson, & Tate, 1997). As expected, ethnic minority youth had significantly higher levels of ethnic identity in the Spring of 6th grade compared to Whites. However, no ethnic differences in the slope were found. The proportion same-ethnic peers in school also did not predict differences in initial status and change in ethnic identity.

In terms of intergroup attitudes, Asian youth had higher initial levels of attitudes favoring their ingroup compared to Whites. Although there was an overall decline in attitudes favoring their ingroup, ethnic minority youth showed less steep declines (more ingroup preference) compared to White youth. There were no differences based on proportion same-ethnic peers in school.

Same-Ethnic Friendship Preference and Ethnic Identity

The second main goal of this study was to examine how same-ethnic friendship preference and ethnic identity were interrelated over time. Results revealed that same-ethnic friendship preference is dynamically related to ethnic identity over the course of middle school for ethnic minority youth but not White youth, indicating that the developmental processes of

ethnic identity and same-ethnic friendship preference are closely linked throughout middle school. This supports past cross-sectional research that has found that same-ethnic friendships are uniquely related to ethnic identity among African American and Latino youth (Graham et al., 2014).

Of particular interest was whether the initial status of same-ethnic friendship preference predicted change in ethnic identity, and whether the initial status of ethnic identity predicted change in friendship preference. As hypothesized, I found evidence for the friendship-to-ethnicity link. Preferring same-ethnic friendships in the Spring of 6th grade predicted greater ethnic identity development for ethnic minority youth over time. Given that identity processes become increasingly important during adolescence, and establishing a strong and positive ethnic identity has a number of developmental benefits (Rivas-Drake et al., 2014), the findings from this study indicate that having more same-ethnic friendships than chance can promote ethnic identity development for ethnic minority youth. These effects did not vary by the school ethnic context suggesting that the shared experience of being a societal minority in the U.S. makes who youth affiliate with an important source of ethnic identity and validation (Graham et al., 2014; Tatum, 2017).

The effect of ethnic identity on friendship preference was not as strong. Earlier levels of ethnic identity predicted steeper increases in same-ethnic friendship preference over time, but only for Asian youth who had fewer same-ethnic peers in school. Specifically, Asian youth attending schools with fewer Asian peers and who had higher levels of ethnic identity at the start of middle school preferred more same-ethnic friendships over time. Although I do not test possible mechanisms to explain why only Asian youth showed this pattern, there are aspects of the Asian experience in the U.S. that are unique. Past research on cross-ethnic friendships has

shown that Asian adolescents were the only ethnic group who were less likely to nominate cross-ethnic friends as the relative academic status of Asians in their school increased (Hamm et al., 2005). Especially relevant to the school context, stereotypes about Asians as academically competent have been shown to be pervasive and engrained among Asian youth, having effects on their ethnic identity development (Yoon et al., 2017). Indeed, evidence suggests that ethnic stereotyping can strengthen ethnic identity, and that for Asian youth in particular, awareness of academic stereotypes and feeling positively about them have been associated with a stronger sense of ethnic identity belonging and exploration (Thompson, Kiang, & Witkow, 2016). Thus, if Asian youth internalize academic stereotypes and see doing well in school as tied to their ethnic identity, a stronger ethnic identity and having a smaller pool of same-ethnic peers to choose from in school may lead to greater friendship segregation due to actual or perceived status inequalities and achievement differences among peers of different ethnic groups. Given the well-documented effects of similarity in attitudes and behaviors toward academics in friendship selection and influence processes (e.g., Flashman, 2012), such friendship choices among Asian youth also have the potential to produce greater “ethnic capital” in their friendship networks (Tatum, 2017), reinforcing academic differences between groups over time. Although I controlled for individual achievement, it remains unclear whether indicators of relative achievement at the *school* level (e.g., overall mean differences in GPA among ethnic group, relative representation of ethnic groups in honors/advanced courses) can create greater segregation in Asian adolescents’ friendships, and whether this becomes more pronounced during high school when tracking is more common and academics become more rigorous. Such dynamics in friendship formation have important implications for Asian youths’ intergroup attitudes (Chen & Graham, 2015).

White youth did not show any systematic associations between ethnic identity and same-ethnic friendship preference, even in schools with fewer same-ethnic peers. These findings are consistent with past research on ethnic identity that has found that White high school students, even when in the numerical minority, did not show the different stages of ethnic identity development displayed by ethnic minority youth (Phinney, 1989). The findings suggest that ethnic identity for Whites does not function as it does for ethnic minority groups perhaps because it has less to do with perceptions of discrimination and prejudice (Operario & Fiske, 2001). More research on how ethnic identity for White youth relates to intergroup relations is needed.

Same-ethnic Friendship Preference and Affective Attitudes Favoring Ingroups

The findings for intergroup attitudes revealed a different pattern. The developmental links between same-ethnic friendship preference and attitudes favoring ingroups were not as strong as those found with ethnic identity. Although the initial levels of same-ethnic friendship preference and attitudes favoring ingroups were significantly and positively correlated, the developmental trajectories were not, suggesting that overall, they do not evolve together. Furthermore, same-ethnic friendship preference at the start of middle school did not predict changes in attitudes favoring ingroups. Rather, a friendship selection effect was found for ethnic minority youth such that ethnic minority youth who had attitudes favoring their ingroup at the start of middle school showed steeper increases in same-ethnic friendship preference over time. White youth did not show this selection bias. These findings support prior research conducted among college students revealing greater ingroup biases in affective attitudes can result in greater same-ethnic friendships in subsequent years (Levin et al., 2003).

Although the associations did not vary by the proportion of same-ethnic peers in school, the ethnic differences found suggest that societal status as opposed to salience based on

numerical representation mattered. Like ethnic identity, intergroup attitudes were less interrelated with friendship choices, above and beyond opportunities, for members of the societally dominant group (Whites) than for ethnic minority youth. Furthermore, ethnic minority youth at the start of middle school favored their ethnic ingroup more so than did Whites and on average, did not show as steep a decline in these biases over time. This is consistent with social identity theory (Tajfel & Turner, 1986) which posits that lower status groups should have a stronger need to feel good about their group and therefore, show more ingroup bias when conditions in the social context are such that comparisons with higher status groups are made. Moreover, past research suggests that global cues, such as ethnicity, lead to more ingroup biases among lower status groups, whereas specific status cues (e.g., achievement) lead to more ingroup biases among high status groups (Mullen, Brown, & Smith, 1992). Thus, the higher initial bias in attitudes, and less change in these attitudes over time for ethnic minority youth may reflect their societal minority status and ingroup preference rather than outgroup derogation (Brewer, 1979, 1999). Indeed, ingroup biases among low-status groups can result from favorable evaluations of the ingroup and not negative evaluations of the outgroup (Bettencourt, Dorr, Charlton, & Hume, 2001).

Implications for Intergroup Relations

Taken together, these findings have important implications for intergroup relations in schools. Given that social categorization and group identity processes lay the foundation for intergroup bias and prejudice (Tajfel & Turner, 1986), some scholars and practitioners may be concerned that preferring same-ethnic friendships (greater friendship segregation) contributes to the development of prejudice among adolescents. The findings from the present study indicate that this may not necessarily be the case for early adolescents of color. Rather, preferring same-

ethnic friendships may be an expression of positive ingroup attitudes and a need to develop a secure and positive ethnic identity as opposed to jeopardizing feelings about outgroups. These processes take place during a time in development when ethnic identity appears to be less stable and when youth are more ambivalent about ethnic group membership (ethnic identity overall declined over middle school). Despite their different histories and unique experiences, ethnic minority adolescents in the U.S. have in common encounters with discrimination and prejudice in their daily lives. The results suggest that as they develop a more nuanced understanding and awareness of what their ethnic groups membership means to others and how they are viewed within broader society, the processes of feeling good about one's ingroup, having a network of same-ethnic friends, and developing a more secure identity is developmentally beneficial for adolescents of color (Rivas-Drake et al., 2014; Tatum, 2017). More research is needed on the consequences of same-ethnic friendships as a developmental asset rather than as a presumed barrier to cross-ethnic contact.

Relatedly, the pattern of findings (attitudes to change in friendships and friendships to change in ethnic identity) suggest a possible developmental sequence. Feeling positive about one's ethnic ingroup can lead to preference for same-ethnic friendships, which can in turn lead to a stronger and more secure ethnic identity for early adolescents of color. It is this secure and strong ethnic identity that may be necessary to reduce bias and promote later interethnic relationships. Past research among older adolescents indicates that a secure ethnic identity can reduce the need to see other groups as less favorable compared to one's ethnic ingroup (Phinney et al., 1997). Furthermore, developing confidence and security in one's own ethnic identity allows for the appreciation, openness, and respect of differences that can promote positive feelings toward outgroups and more diverse friendship ties (Rivas-Drake et al., 2017; Whitehead,

Ainsworth, Wittig, & Gadino, 2009). A testable developmental hypothesis then is to examine how attitudes favoring one's ingroup and greater same-ethnic friendship preference can lead to a secure and stable ethnic identity, which can then foster outgroup orientation.

Finally, the findings also have implications for careful measurement of same-ethnic friendships. I utilized one of many different measures of friendship ties that accounts for ethnicity. Although low levels of same-ethnic friendship preference imply greater cross-ethnic friendship preference, because this measure also accounts for opportunities within a school to form same- and cross-ethnic friendships, an individual can show high levels of same-ethnic friendship preference but can still have a cross-ethnic friend. This is particularly true when individuals have many opportunities to form cross-ethnic friendships in a school. These findings further support the power of having even one cross-ethnic friend, and especially a high quality and stable friendship, to reduce prejudice (Binder et al., 2009; Lessard, Kogachi, & Juvonen, 2019). Both same and cross-ethnic friendships are interrelated and influence one another and ways to take both into account are needed.

Limitations

While the findings from this study make contributions to the literature, it is not without limitations. The multivariate growth model allows for modeling the developmental trajectories of each construct and testing how the initial levels of each construct are related to developmental change in the other. Given that developmental trajectories were of particular interest, I was not able to look at time-specific associations of these variables. That is, I was able to test how individual differences influenced systematic developmental growth (e.g., adolescents showing more attitudes favoring ingroups display greater same-ethnic friendship preference over time); however, time-specific deviations from these trajectories were not tested. Future research can

utilize growth modeling with structured residuals (Curran, Howard, Bainter, Lane, & McGinley, 2014) to account for developmental trajectories and test within-person dynamic effects to inform the degree to which these trajectories are malleable during middle school (e.g. do dynamic changes in attitudes affect subsequent friendship dynamics?).

I suggested earlier that attitudes and identity are related in a possible developmental sequence, but I have modeled them separately in this study. Because I did not start with specific hypotheses about these associations, I did not test ethnic identity, intergroup attitudes, and same-ethnic friendship preference simultaneously. Past research suggests that ethnic identity and intergroup attitudes undergo important changes across adolescence and that there are important links between the two (Ruble, Alvarez, Bachman, & Cameron, 2004). Future work can think about modeling these associations together.

Third, this study focuses on ethnic differences and the school ethnic context revealing some of the commonalities among ethnic minority youth in the U.S. However, in doing so, I do not deal with the full complexity of intra-ethnic differences. Considering heterogeneity within ethnic groups, including who is subjectively perceived to be a same-ethnic friend, as opposed to a cross-ethnic friend, will be important to consider in future research when understanding the predictors and consequences of such friendships (Chen & Graham, 2017). Furthermore, understanding the influence of, for example, gender, social class, and generational status, as well as other important social identities on interpersonal relationships are critical for future research. For example, does friendship segregation based on ethnicity bridge diversity on these other critical social identities and improve attitudes along those lines?

Finally, the measure of attitudes favoring ingroups were limited in that all ethnic outgroups were combined. Among White participants, attitudes toward African Americans,

Latinos, and Asians were aggregated as the outgroup; Asian outgroups were African American, Latino, and White; Latino outgroups were African American, Asian, and White; and African American outgroups were White, Asian, and Latino. Yet different ethnic groups have unique histories and experiences that inform their views and responses to intergroup relations. The relative attitudes favoring ingroups and norms of social distance between particular ethnic groups may be greater for some groups than others (Joyner & Kao, 2000). For example, in previous research with this sample, Asian 6th graders reported more negative attitudes toward African Americans than toward other ethnic groups (Chen & Graham, 2015). Future work could account for these complex intergroup relations by disaggregating outgroups.

Conclusion

The findings from this study suggest that taking a developmental approach and recognizing the unique needs of ethnic minority youth are needed when designing successful prejudice reduction interventions. At a time in development when youth may experience insecurity around ethnic identity, fostering positive feelings about one's ethnic ingroup and same-ethnic friendships can strengthen intergroup relationships. Prejudice reduction interventions that capitalize on these processes have the potential to create school climates that value diversity and establish equal status among ethnic groups in a society where inequalities in status and power along ethnic lines persist (Tatum, 2017). Rather than viewing a strong and positive ethnic identity and preferences for same-ethnic friendships as creating greater ethnic divides, this study suggests the potential for such dynamics to lay the foundation for assuring greater integration, embracing difference, and crossing of ethnic boundaries. Furthermore, efforts that do not acknowledge such identities and ingroup preferences could unintentionally devalue the experiences of youth of color and undermine prejudice reduction efforts by creating

more intergroup divides. It remains to be seen whether approaches that take into account multiple identities (e.g., Dovidio, Gaertner, & Saguy, 2009) are particularly effective in middle school when these processes in early adolescence are emerging, or whether the discrimination and prejudice adolescents of color encounter undermine such efforts (Sidanius, Van Laar, Levin & Sinclair, 2004). These are crucial questions that future research can address to better understand intergroup relations in multiethnic schools.

Table 1.

Intercorrelations and Descriptive Statistics of Main Study Outcome Variables.

	Ethnic Identity S Gr 6	Ethnic Identity S Gr 7	Ethnic Identity S Gr 8	Attitudes F Gr 6	Attitudes S Gr 6	Attitudes S Gr 7	Attitudes S Gr 8	Friend Preference F Gr 6	Friend Preference S Gr 6	Friend Preference S Gr 7	Friend Preference S Gr 8
Ethnic Identity S Gr 6	–										
Ethnic Identity S Gr 7	.491**	–									
Ethnic Identity S Gr 8	.415**	.536**	–								
Attitudes F Gr 6	.125**	.117**	.113**	–							
Attitudes S Gr 6	.133**	.129**	.110**	.493**	–						
Attitudes S Gr 7	.129**	.199**	.175**	.371**	.459**	–					
Attitudes S Gr 8	.164**	.195**	.226**	.308**	.320**	.315**	–				
Friend Preference F Gr 6	.097**	.078**	.065**	.153**	.123**	.089**	.102**	–			
Friend Preference S Gr 6	.103**	.097**	.101**	.125**	.171**	.113**	.104**	.589**	–		
Friend Preference S Gr 7	.105**	.098**	.097**	.133**	.160**	.169**	.128**	.436**	.491**	–	
Friend Preference S Gr 8	.084**	.093**	.126**	.151**	.187**	.172**	.188**	.382**	.413**	.535**	–
Mean	3.206	3.163	3.180	0.488	0.437	0.405	0.197	1.014	1.085	1.212	1.377
SD	0.649	0.663	0.644	0.658	0.682	0.653	1.021	4.233	4.061	4.083	4.040
N	4388	3917	3591	4405	2873	2535	2273	4227	4213	3732	3373

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 2.

Parameter Estimates and Model Fit Statistics of the Conditional Growth Curve Models.

Parameter	Affective Attitudes Favoring One's Ingroup	
	Ethnic Identity Standard. (S.E.)	Standard. (S.E.)
<i>Predicting Intercept Factor</i>		
Gender	.03 (.03)	-.05 (.03)
Parent Education	-.03** (.01)	-.01 (.01)
Generational Status	.04 (.04)	.01 (.05)
African American	.34*** (.04)	-.07 (.05)
Asian	.23*** (.05)	.30*** (.05)
Latino	.30*** (.05)	.01 (.04)
Overall GPA	.04* (.02)	-.05** (.02)
Overall Honors Status	.11* (.05)	-.02 (.04)
% Same-Ethnic Peers in School	.11 (.07)	.19 (.12)
School Simpson's Diversity Index	-.13 (.33)	-.24 (.21)
School % Free/Reduced Meals	.01 (.00)	.00 (.00)
<i>Predicting Slope Factor</i>		
Gender	.03* (.02)	-.01 (.02)
Parent Education	-.01 (.01)	-.00 (.01)
Generational Status	.01 (.02)	.04 (.03)
African American	.04 (.03)	.56*** (.03)
Asian	-.04 (.03)	.50*** (.03)
Latino	-.03 (.02)	.57*** (.03)
Overall GPA	.01 (.01)	.01 (.01)
Overall Honors Status	-.03 (.02)	.04* (.02)
% Same-Ethnic Peers in School	.08 (.13)	-.11* (.05)
School Simpson's Diversity Index	.00 (.00)	.27*** (.07)
School % Free/Reduced Meals	-.01 (.05)	.00 (.00)
<i>Time-Varying Controls</i>		
W2 GPA	N/A	.06* (.03)
W2 Honors Status	N/A	.03 (.06)
W3 GPA	.04 (.02)	-.07 (.04)
W3 Honors Status	-.02 (.04)	.09 (.10)
W4 GPA	.02 (.02)	-.02 (.04)
W4 Honors Status	-.05 (.12)	.05 (.09)
Intercept	2.97*** (.05)	.46*** (.03)
Slope	.01 (.02)	-.50*** (.03)
Intercept/Slope Covariance	-.03*** (.01)	-.03*** (.01)
Intercept Variance	.22*** (.02)	.20*** (.02)
Slope Variance	.04*** (.01)	.01 (.01)
χ^2	28.82 ($p = .09$)	121.87 ($p < .001$)
CFI	1.00	.93
RMSEA (90% CI)	.01 (.00, .02)	.06 (.06, .07)

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

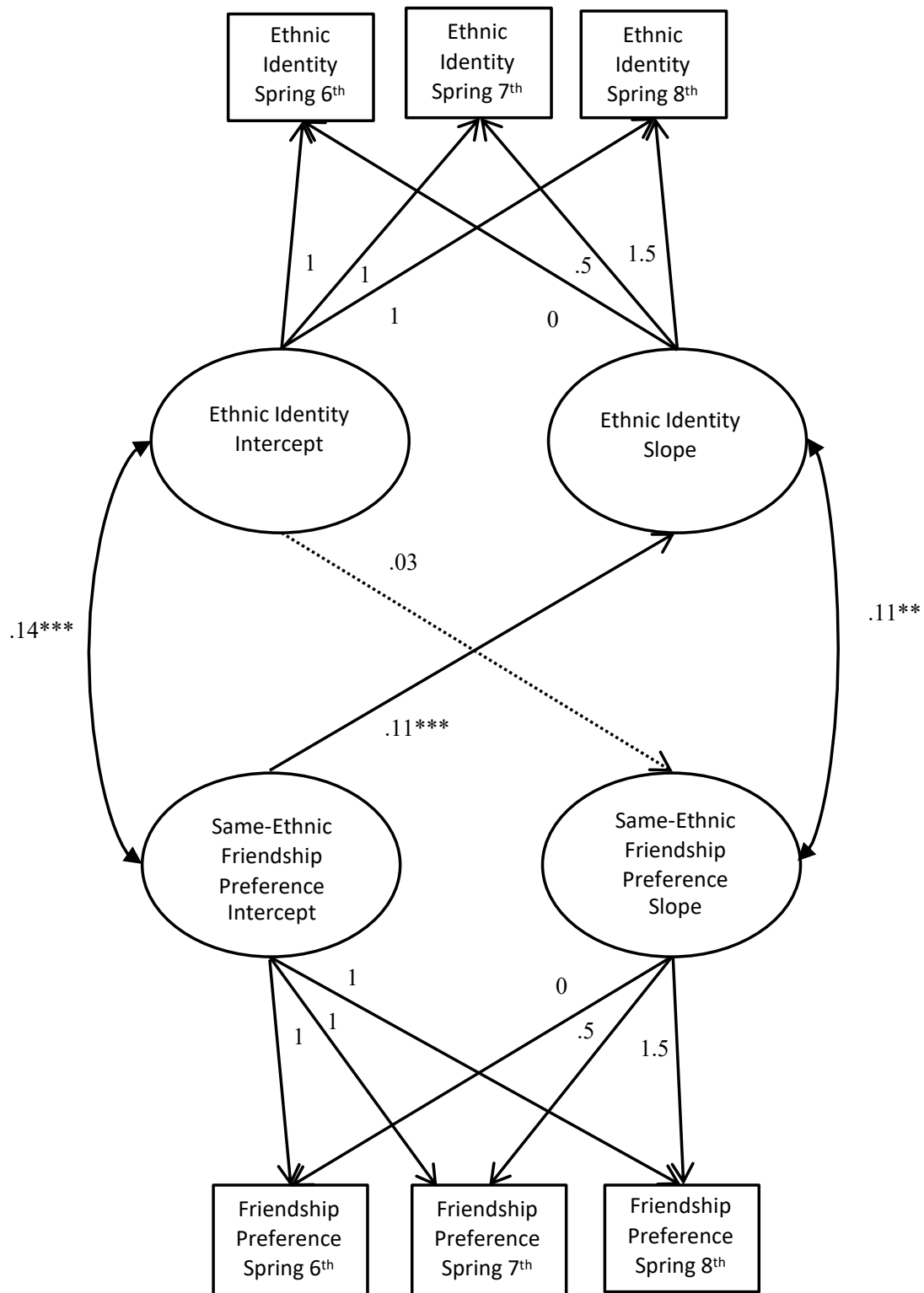


Figure 1. Overall conditional parallel process model examining the longitudinal associations between same-ethnic friendship preference and ethnic identity over time.

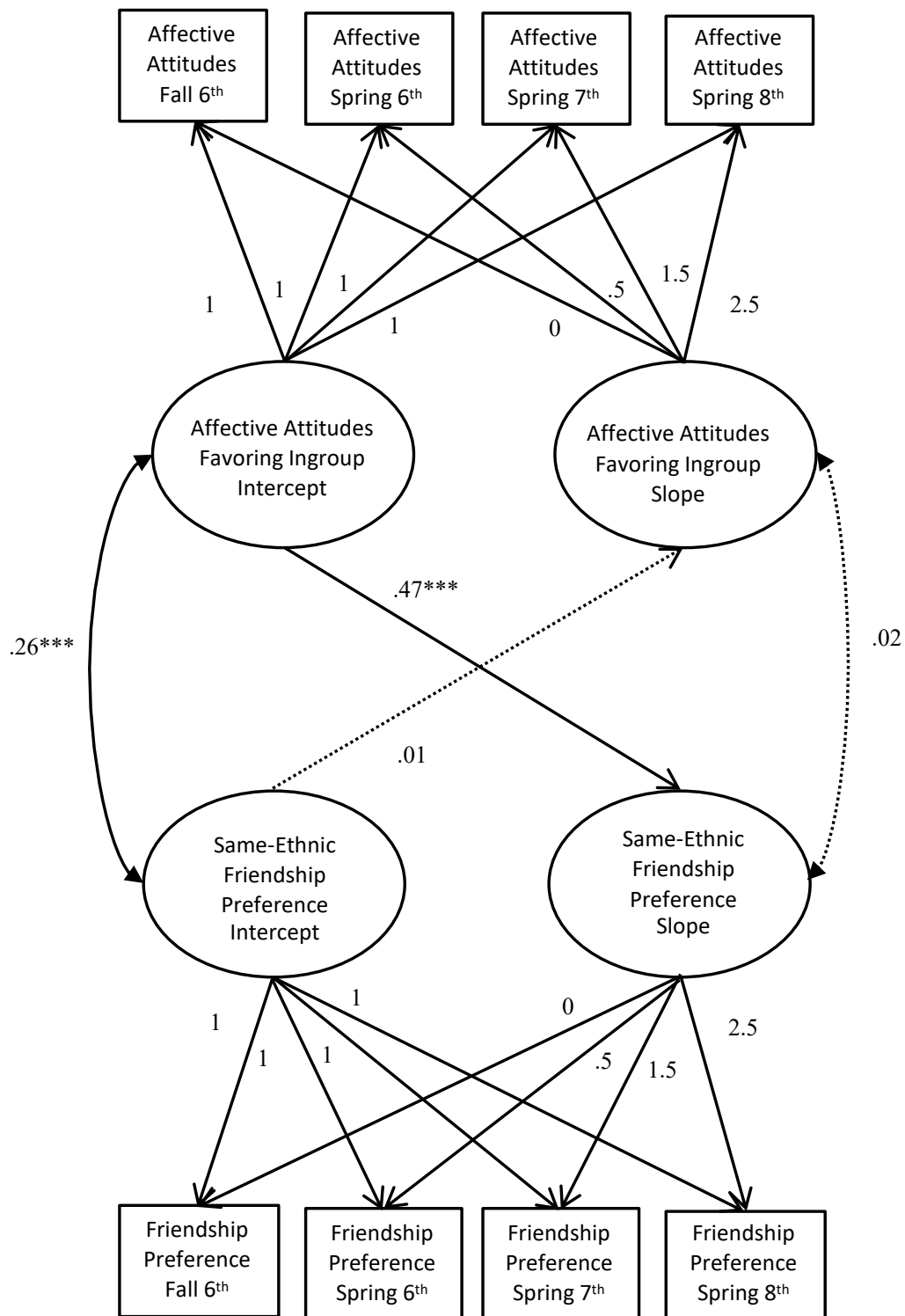


Figure 2. Overall conditional parallel process model examining the longitudinal associations between same-ethnic friendship preference and attitudes favoring one's ingroup over time.

GENERAL DISCUSSION

The nature of intergroup relations in the U.S. is evolving as ethnic groups change in relative size and status. These demographic shifts are most dramatic among the U.S. school-aged population, which is becoming increasingly racially and ethnically diverse (NCES, 2019). Although positive cross-ethnic interactions are necessary to realize the educational benefits of ethnic diversity in schools (Garces & Jayakumar, 2014; Graham, 2018), research suggests social integration has not kept pace with opportunities for contact. As voluntary sources of contact, friendship preferences are one way to assess the degree of social integration between ethnic groups within schools, and are of interest to researchers given the potential they have to create meaningful and transformative change in reducing prejudice and inequality (Pettigrew, 1998; Davies et al., 2011). Friendships are significant for adolescents in navigating their social worlds and are unique from other relationships in their level of intimacy and equal status (Hartup, 1996; Newcomb & Bagwell, 1995). Friendships, therefore, have the potential to lead to greater mutual respect, understanding, and empathy across ethnic lines. Despite this, adolescent friendship networks tend to be segregated by ethnicity (McPherson et al., 2001; Moody, 2001; Quillian & Campbell, 2003). Preferring same-ethnic friendships may be normative and developmentally healthy, particularly for ethnic minority youth (Tatum, 2017). However, such preferences could limit the benefits of diversity in schools by fostering stereotypes, marginalization, and perceived ethnic differences and tensions. Thus, understanding how and why friendship preferences operate in early adolescence can help to identify the conditions under which same-ethnic friendships should be encouraged or mitigated, and for whom.

The current dissertation took a longitudinal approach to investigate the development of same-ethnic friendship preferences over the course of middle school. I employed a measure of

friendship preference used in past research that accounts for the probability of having a same-ethnic friend, given the opportunities for forming both same- and cross-ethnic friendships in school (Jugert et al., 2011; Moody, 2001; Wilson & Rodkin, 2011). By controlling for opportunity, the effect of school ethnic composition captures the intergroup dynamics and climate within schools, over and above numerical composition (Mouw & Entwisle, 2006). Few studies have examined the development of friendship preferences based on ethnicity over time, and its predictors and consequences are not well understood. In Study 1, I examined the development of same-ethnic friendship preference over the course of middle school and considered the compositional and organizational features of schools and classrooms that lead to the development of same-ethnic friendship preference. In Study 2, I evaluated the interplay of same-ethnic friendship preference and ethnic identity, and friendship preferences and intergroup attitudes, over the course of middle school, and whether these associations depended on the school ethnic context and ethnicity.

Implications

The findings from these studies have several implications for intergroup relations and prejudice reduction strategies in schools to create more inclusive environments. First, the structural and organizational features of schools play an important role in shaping same-ethnic friendship preference in middle school, over and above the normative trajectories of preferring more same-ethnic friendships over time. In particular, school and classroom compositions that highlight comparisons and status differences appeared to affect the degrees to which ethnicity was made salient and preferences for same-ethnic friendships increased (youth “hunkered” down). Youth who had few same-ethnic peers in schools that were not ethnically diverse showed more same-ethnic friendship preference at the start of middle school. Furthermore,

academically stereotyped youth who were underrepresented in honors classes showed greater same-ethnic friendship preference over time. Research on social identity theory suggests that there are certain conditions under which ingroup identification and intergroup bias occur, including when social identity is salient with respect to a comparative judgment, and the intergroup comparison is related to the intergroup status hierarchy (Turner, 1999). Youth who were small in size relative to a large ethnic outgroup, and who were underrepresented in classes where there were strong academic stereotypes about their ethnic ingroup may be especially vulnerable to turning inward and feeling marginalized given a lack of “critical mass, as others have documented (e.g., Benner & Graham, 2009).

What might buffer same-ethnic friendship preference for youth whose ethnic group is small in size or is underrepresented in contexts where their identity is threatened? The findings indicate that ethnic diversity in schools, and perhaps in classrooms (although I lacked power to test this specifically in this dissertation), could buffer marginalization and a need to hunker down at least at the start of middle school when social networks are beginning to form. I found that youth with fewer same-ethnic peers in more ethnically diverse schools showed less same-ethnic friendship preference suggesting that ethnic comparisons related to status may be reduced in contexts where there are many different, relatively equally represented outgroups present. School ethnic diversity could also signal initially that diversity is valued and welcomed (Garces & Jayakumar, 2014). Given that changing the compositions of schools is challenging, being mindful of how students are organized within schools and fostering a positive ethnic climate where youth from different ethnic backgrounds are treated equally and interactions between groups are encouraged are likely to improve intergroup relations (e.g., Graham & Morales-

Chicas, 2015; Saenz et al., 2007). Relatedly, reducing social and academic hierarchies can also predict less friendship preferences for same-ethnic peers (Cappella et al., 2013, 2017)

School ethnic diversity, however, was not sufficient to buffer against same-ethnic friendship preference over time. Rather, school ethnic diversity predicted greater increases in same-ethnic friendship preference over time for all youth. Although this finding is somewhat consistent with past research that shows greater school diversity predicts greater friendship segregation except in the most ethnically diverse schools (e.g., Moody, 2001), the mechanisms for this finding are not clear. It could be that greater school ethnic diversity provides all groups (in this sample, the four major pan ethnic groups) with enough same-ethnic peers to form friends who share other important attributes without having to cross ethnic lines. It could also reflect the development of ethnic identity among youth which may be increasingly heightened in ethnically diverse contexts over time, thus making same-ethnic friendships increasingly more important. We also know that school ethnic diversity is related to less vulnerability (Juvonen et al., 2006, 2018) and more perceived discrimination (Benner & Graham, 2013). Thus, better understanding the heterogeneity of experiences within ethnically diverse schools, such as how different ethnic groups construe diversity differently, and how different schools that share similar levels of ethnic diversity differ on important features such as ethnic climate or within-school segregation, and its effects on friendship dynamics is necessary to inform intervention strategies.

At the individual-level, findings from this dissertation suggest that same-ethnic friendship preferences are not merely a response to the structural and organizational features of schools that provide feelings about outgroups or negative comparisons. Nor do they necessarily cause intergroup biases and prejudice. Rather, the findings emphasize that youth of color may prefer same-ethnic friendships because of feeling positively about their ethnic group at a time when

they are exploring their ethnic identity. Questions of identity are fundamental aspects of the adolescent experience. Although each group has its own history and particular social context that shapes ethnic identity, youth of color in particular have a desire to affirm these elements of who they are (Tatum, 2017). Same-ethnic friendships provide a context through which youth can do so. Although not tested in this dissertation, past research suggests that it is a secure ethnic identity that can lead to greater openness and respect for differences and promote more diverse friendship ties (Rivas-Drake et al., 2017; Whitehead, et al., 2009). Therefore, fostering positive feelings about one's ingroup and same-ethnic friendships could strengthen intergroup relations. Prejudice reduction interventions capitalizing on these unique processes for ethnic minority youth have the potential to create schools that promote inclusion of all ethnic groups and establish the necessary equal status among ethnic groups amid a society where inequalities in status and power along ethnic lines persist. Furthermore, the difference in findings between ethnic groups suggest that multiethnic contexts may be construed differently depending on each group's societal status.

Limitations and Future Directions

There were several limitations of the current studies that raise important directions for future research. In this dissertation, I focus on positive relationships; however, negative intergroup experiences such as discrimination, ethnic victimization, or other forms of social rejection due to ethnicity can impede the positive effects of diverse contexts and interethnic contact (Tropp, 2003). Youth of color in particular, face greater negative race-related experiences as they develop (Garcia Coll et al., 1996). Thus, the formation of students' friendship preferences, ethnic identities, and outgroup attitudes could be further understood by examining the negative intergroup experiences that students encounter. Consideration of both

positive and negative interactions is needed to better understand strategies to reduce prejudice and create more inclusive school environments. For example, Study 2 found that students do not necessarily prefer same-ethnic friendships because of how they feel about the outgroup but rather because of how they feel about their ingroup. But it is also possible that these youth prefer same-ethnic friendships because of how they *perceive* the outgroups view *them*. If this is the case, then schools need to place the effort on improving the outgroup's opinions of the ingroup.

I also do not examine how both individual friendship segregation and more broadly, segregation of different ethnic groups at the classroom- or school-level can inform perceptions of norms of same-ethnic friendships which can affect intergroup relations. Given that norms are learned through exposure to behaviors and attitudes of group members (Paluck & Shepherd, 2015), more research is needed to understand how norms change and how structural features of the broader friendship network are related to such perceptions.

Finally, I did not use social network analyses in these studies. Although the measure of same-ethnic friendship preference controls for opportunities for same- and cross-ethnic friendships, I am not able to control for network mechanisms that can lead to greater same-ethnic friendships that are not due to preferences (i.e., one is more likely to form friendships with friends of friends). I am also not able to capture broader friendship networks at the school level. While direct friendships are important for adolescent development, they also define a broader social context in which these relationships occur. The degree to which adolescents' own friendship networks are integrated within the school friendship network, and how interconnected the overall school friendship network happens to be, could have important moderating effects on the impact of same-ethnic friendship preference on developmental outcomes (Cappella et al., 2013; Crosnoe, & Needham, 2004; Gest, Osgood, Feinberg, Bierman, & Moody, 2011). School

and classroom ethnic diversity do not tell us who is hanging out with who and how segregated or integrated the overall friendship patterns are. Moving forward, examining these relationships longitudinally is needed.

Conclusion

By taking a developmental approach, the current dissertation suggests that same-ethnic friendship preferences in middle schools are shaped by the school composition and organization of students into classrooms, but also by what is important to adolescents, including their developing ethnic identity. The studies offer important theoretical contributions by underscoring the need to consider the individual adolescent within the broader classroom, school and societal milieu in which friendship preferences develop. The findings underscore that to reduce prejudice and create more inclusive school environments, reducing the salience of race, particularly in school and classroom contexts that can unintentionally promote comparisons related to status and hierarchies along ethnic lines is necessary. At the same time, sensitively acknowledging different ethnic groups by affirming and fostering a strong and positive ethnic identity is equally important. Ignoring ethnicity when it is so meaningful, particularly for youth of color, denies their experience. Strategies that leverage their identities and friendship preferences could lay the foundation for equal status among ethnic groups and greater openness and appreciation of diversity.

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