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**Intergroup Contact Attitudes across Peer Networks in School: Selection, Influence, and
Implications for Cross-Group Friendships**

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Abstract

This study offers new insights into the power of peer networks for shaping intergroup relations in a diverse school. Data were drawn from a longitudinal study of 6th - 8th graders ($N = 524$; $M_{ageT1} = 11.87$; 48% girls; 9% Asian American/Pacific Islander, 28% African American, 13% Latino, 1% Native American, 31% White, 5% Other, and 11% Multiracial) in the Midwestern U.S. Students with more positive intergroup contact attitudes (ICA) were most likely to be friends with similarly-minded students. Students with more positive ICA were less likely to select friends of the same race/ethnicity than those with less positive ICA. Finally, students' ICA became more similar to their friends' ICA over time. Results implicate school-level norms and contagion in students' ICA.

Keywords: intergroup contact attitudes, adolescence, peer networks, diversity, friendship

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The increasing ethnic diversity of the U.S. youth population portends the heightened potential for youth to engage with individuals of ethnic/racial backgrounds different from their own. However, the fact of diversity itself is insufficient for individuals to benefit from growing up in a multicultural society (Thijs & Verkuyten, 2014). Even in diverse contexts that provide opportunity for intergroup interaction, adolescents vary in the extent to which they are interested in and capable of actually engaging in such interactions (Graham, Munniksma, & Juvonen, 2014; Moody, 2001; Ramiah, Schmid, Hewstone, & Floe, 2015). This suggests there are important individual differences in the extent to which youth benefit from exposure to diverse peers and engage with such opportunities in productive ways (e.g., by forming cross-group friendships; Graham et al., 2014; Tropp, O'Brien, & Migacheva, 2014). Greater understanding of what promotes engagement in and sustenance of cross-group friendships, in particular, is sorely needed, as these tend to decline with age (e.g., Aboud, Mendelson, & Purdy, 2003; see also Turner & Cameron, 2016).

More research is needed on processes that may facilitate youths' ability to interact with diverse peers in positive and effectual ways. The ability to engage effectively across ethnic/racial groups has implications for other important social and developmental outcomes (e.g., Bagci, Rutland, Kumashiro, Smith, & Blumberg, 2014; Fletcher, Rollins, & Nickerson, 2004; Lease & Blake, 2005) as well as later educational experiences (e.g., college), the workforce, and positive intergroup relations in broader society (e.g., Gieling, Thijs, & Verkuyten, 2014; Gurin, Dey, Hurtado, & Gurin, 2002; Jayakumar, 2008; Kawabata & Crick, 2008, 2011, 2015; Pettigrew & Tropp, 2008; Reimer et al., 2017; Saleem, Yang, & Ramasubramanian, 2016). Indeed, this

capacity is part and parcel of youths' social awareness and relationship skills, which are two of the five core social-emotional competencies promoted by the Collaborative for Academic, Social, and Emotional Learning (i.e., CASEL 5; Weissberg, Durlak, Domitrovich, & Gullotta, 2015).

Theory and extensive research suggest that conditions that reduce prejudice in intergroup interactions (e.g., Allport, 1954; Pettigrew & Tropp, 2005, 2012) support youths' ability to adapt to heterogeneous environments and endorse a positive orientation toward intergroup relations (e.g., appreciating and valuing diversity; Tropp & Bianchi, 2006; Verkuyten, 2007). What is less clear is the extent to which peer influence processes play a role in youths' interest in and valuing of intergroup contact experiences. For example, are youth likely to form friendships with students who share their attitudes toward intergroup contact? In addition, to what extent do friends influence one another's intergroup contact attitudes? These were the major questions investigated in the present study.

Theoretical Framework

The present study uses two distinct but complementary frameworks. First, we draw from intergroup contact theory (Allport, 1954; Pettigrew & Tropp, 2012), which posits that youth will be more disposed toward intergroup contact when there are supportive norms (i.e., authority sanction) in the setting (see e.g., Tropp, O'Brien, Gonzalez, Valdenegro, Migacheva, de Tezanos-Pinto et al., 2016). Though the school investigated in the present study is not implementing specific prejudice reduction approaches, it is engaged in practices that are meant to promote inclusiveness. Specifically, the administration has been in the process of implementing a school-wide social-emotional learning program that aims to support a positive and normative view of the school as one inclusive community, which is reinforced by teacher practices and peers'

mutual regulation of one another. The program's literature notes that it was designed with a philosophy about inclusion and equity; however, it--like many other SEL programs--adopts a colorblind approach in that none of the activities or practices explicitly engage issues of race, ethnicity, or other social identities with students (Jagers, 2016).

Yet, school conditions that encourage inclusiveness may not be sufficient, as intra-school dynamics among peers may also play a role in youths' dispositions toward engaging with peers from diverse groups. This is because peers provide useful social information to one another throughout adolescence (Galván, Spatzier, & Juvonen, 2011), which has broad implications for how they engage with others in schools. For example, Tropp and colleagues (2016) found that adolescents' perceptions of their peers' norms toward intergroup contact were positively related with their own intergroup attitudes, including their feelings of comfort and interest in interethnic friendships. These peer dynamics may be further complicated by broader, potentially distinct social norms of their shared context, like their school or classroom. Among adolescents, exposure and adherence to such norms have been found to be associated with a variety of social behaviors, including aggressiveness, academic achievement, and prosocial behavior (Dijkstra & Gest, 2015; Laninga-Wijnen, Harakeh, Steglich, Dijkstra, Veenstra, & Vollebergh, 2017).

To conceptualize such peer dynamics, we employ a second theoretical framework by Brown and colleagues (2008). According to this framework, the extent to which peers influence each other on given behaviors is contingent on the target's openness to influence (i.e., own intergroup contact dispositions), the salience and nature of the peer influencers (i.e., friendship context), and the extent to which the target has the capacity and opportunity to conform to or enact particular behaviors (e.g., ethnically heterogeneous setting). In the present study, we posit that youth with particular intergroup contact attitudes will seek others who share their views

because they will be comfortable around others who share their values around diversity. We reasoned that drawing on both frameworks allows us to better explicate how youth construct norms around intergroup contact in ethnically heterogeneous settings. In particular, we are able to better capture how peers may serve as socializing agents in regard to intergroup relations within an ethnically heterogeneous setting that provides supportive conditions (i.e., authority sanction) for contact.

Peers and Intergroup Attitudes among Adolescents

Changes in peer structures and influence emerge in adolescence. Peer processes, such as homophily (i.e., associating with similar others), are important for a wide range of issues during this period of life (e.g., McPherson, Smith-Lovin, & Cook, 2001; Veenstra, Dijkstra, Steglich, & Van Zalk, 2013). Adolescents' intergroup contact attitudes (e.g., valuing friendships with diverse others) are likely no exception to the more general pattern of homophily, as empirical research shows that peer contexts influence youths' understanding of ethnic/racial norms (e.g., Ramiah et al., 2015; Tropp et al., 2016). This observation has been made in numerous ethnographic accounts that find that adolescents' understanding of ethnic/racial norms in heterogeneous schools are constructed and reinforced among peers (e.g., Lee, 1996; McLeod, 1995; Pollock, 2004; Rosenbloom & Way, 2004; Valenzuela, 1999). Thus, it appears that there is an important interplay between peer interactions and youths' attitudes toward ethnic and racial features of their social experiences, especially in heterogeneous settings.

Experimental studies find that direct, vicarious, and extended intergroup contact opportunities at school are linked to individuals' assessments of racially-relevant situations. For instance, McGlothlin and Killen (2010) argued and found that children's social experience (i.e., having intergroup contact at a racially heterogeneous school) was associated with lower ingroup

bias in ratings of a hypothetical transgressor. In addition, White and Black students attending heterogeneous schools reported similar likelihoods in the potential for friendship between a Black transgressor and White victim and a White transgressor and Black victim. Wright and colleagues' (1997) extended contact hypothesis argues that the benefits associated with cross-group friendship might also stem from vicarious experiences of friendship, that is, the knowledge that ingroup members have outgroup friends. If an outgroup member is observed being friendly and positive to an ingroup member (e.g., has a friendship), individuals' expectations about intergroup interactions may be more positive. Moreover, seeing an ingroup member being friends with an outgroup member suggests that they are tolerant of the outgroup, which may influence the attitudes of other ingroup members by establishing the norm for the appropriate behavior toward outgroup members. A series of cross-sectional and experimental studies have demonstrated that people who know ingroup members with outgroup friends show reduced intergroup bias (Cameron, Rutland, Brown, & Douch, 2006; Crystal, Killen, & Ruck, 2008; Turner, Hewstone, & Voci, 2007; Turner, Hewstone, Voci, & Vonofakou, 2008; Wright et al., 1997; for a review, see Turner, Hewstone, Voci, Paolini, & Christ, 2007).

Peer attitudes and norms related to intergroup contact are also associated with participants' own interest in intergroup contact (e.g. Carlson et al., 2003; Kiesner, Maass, Cadinu, & Vallese, 2003; Ramiah et al., 2015; Tropp et al., 2016; Turner et al., 2008). For example, in a study of an ethnically mixed (British and Southeast Asian) high school in the U.K., Ramiah and colleagues (2015) found that both British and Southeast Asian students attributed both the ingroup's and outgroup's lack of intergroup interaction to a lack of interest. Indeed, peer conformity is known to peak during early adolescence (e.g., Brown, 1990), further highlighting the importance of peer attitudes and norms related to intergroup contact. Individuals who hold

positive perceptions of ingroup norms toward the outgroup, and who realize that behaving positively toward the outgroup will not be negatively sanctioned by others, may be especially likely to seek intergroup contact themselves. For example, Turner and colleagues (2008) found that adolescents' perceived peer attitudes towards outgroups were significantly and positively associated with participants' own outgroup attitudes. Tropp and her colleagues (2016) found that adolescents who perceived that their same-ethnic friends valued and approved of having school friends from the other ethnic group were themselves more comfortable and interested in cross-group interactions. Similarly, among a sample of Hispanic early adolescents, perceptions of close friends' comfort level with cross-race social interaction predicted more favorable other-group orientation, above and beyond school diversity and direct cross-group friendships (Carlson et al., 2003). Finally, British and Southeast Asian students' perceptions of ingroup norms for intergroup contact (i.e., encouragement by friends and family to have such contact) at an earlier point in time predicted the likelihood that they chose to sit with outgroup students in a hypothetical scenario presented six months later (Ramiah et al., 2015).

A limitation of extant work is that peer attitudes and norms regarding intergroup contact are often assessed using explicit reports of the participant's perceptions of peer norms and thus are subject to participants' own biases, such as the tendency to believe that others are more similar to oneself than may be the case (Thijs & Verkuyten, 2016). By contrast, analysis of adolescents' friendship networks provides an important complement to prior work on this topic by examining peer influence through an implicit measure less susceptible to participants' own biases. As we know from research on peer networks and myriad facets of adolescent experiences, unstated peer norms (e.g., homophily that manifests via selection and influence processes) play an important but not necessarily explicit role in youths' outcomes (e.g., mental health, social

behavior, substance use; Osgood, Ragan, Wallace, Gest, Feinberg, & Moody, 2013; Schaefer, Kornienko, & Fox, 2011; Sijtsema, Ojanen, Veenstra, Lindenberg, Hawley, & Little, 2010). As a peer network approach does not rely on youths' reports of their friends' intergroup attitudes, results accordingly tell us about tacit agreement and implicit socialization amongst peers with regard to the value of intergroup contact. Applying this methodological and analytic approach, the present study examined the extent to which early adolescents' intergroup contact attitudes were influenced by those of their proximal peers and friends in an ethnically diverse school.

To our knowledge, no studies have examined the relation between intergroup contact attitudes and friendship ties among adolescents using a method that can parse the role of selection from socialization in intergroup contact attitudes among friends. However, it follows from the logic of intergroup contact theory that feeling valued and accepted by outgroups can promote a positive disposition toward contact in diverse settings. For instance, Tropp and Bianchi (2006) found that, among ethnic minority college students aged 17-22, perceived interest by the outgroup (majority students) in having contact was associated with their perception that the outgroup valued diversity, and this in turn predicted students' own interest in having intergroup contact. That is, students who are otherwise stigmatized but are made to feel safe and comfortable in heterogeneous situations may be more motivated to engage with outgroup members. One reason for this may be that youth seek out peers who have similar dispositions toward intergroup contact, but another is that youth are sensitive to the intergroup attitudes of peers and their own attitudes change over time as a result.

As we consider youths' navigation of peers' intergroup attitudes, we also must account for how adolescents' own understandings of ethnicity and race may inform their interactions in ethnically diverse settings (e.g., Phinney, et al., 1997; Verkuyten, 2005). Specifically, youth vary

in the meaning ascribed to the role of ethnicity/race in their lives (Sellers et al., 1997, 1998), and an extensive literature indicates that such beliefs are related to a number of important adjustment outcomes (Rivas-Drake, Seaton, et al., 2014). One such aspect that is particularly pertinent to youths' interactions in heterogeneous spaces is their sense of public regard, which refers to their perceptions of others' views of their ethnic/racial group (Sellers et al., 1998). Among dimensions of ethnic-racial identity, public regard's focus on youths' awareness of external racial attitudes and beliefs is particularly relevant for consideration in the current study.

The Current Study

Drawing from the aforementioned literature, we sought to examine three distinct questions related to peer influences and youths' intergroup contact attitudes among adolescents in an ethnically and racially heterogeneous middle school. First, we examined the extent to which intergroup contact attitudes were similar within the friendship networks of 6th, 7th, and 8th grade students. We have chosen to focus on early adolescence in an effort to broaden the literature examining the intersection of intergroup contact and friendship; while early adolescence is a time of increasing friendship salience and social development (Brechwald & Prinstein, 2011; Umaña-Taylor et al., 2014), much of the extant work in this area has focused on older adolescents.

Our first hypothesis pertains to the role of selection processes. Given the extensive literature underscoring homophily along numerous facets of adolescent social experience, we expected students to form friendships with peers who have similar levels of intergroup contact attitudes. In our primary analyses, we considered ethnic/racial category, gender, and immigrant generation as potentially important covariates of homophily (cf. McPherson et al., 2001). We also considered whether students participated in the same advisory (homeroom) for two reasons.

First, advisory in this school was a key setting for the implementation of the social-emotional learning program discussed earlier; this is where students practiced perspective-taking and other competencies related to the central question of the present study. Second, it is well-established that, due to tracking practices in U.S. schools, students' courses are typically scheduled such that they engage with a cohort of peers. Sharing a setting such as an advisory meant that students were also likely to see each other in other courses during the day, which might promote homophily due to propinquity (access); this makes it an important factor to take into account in the present study (Schaefer, Simpkins, & Ettekal, 2018). Lastly, we considered adolescents' public regard attitudes as a possible covariate of note, as youth may seek out peers who have a similar sense of others' acceptance and valuing of their ethnic/racial group.

Second, we explored the extent to which youth influence the intergroup contact attitudes of their friends. For our second hypothesis, we predicted that, given extant literature on the role of friends on youths' social attitudes and beliefs, intergroup contact attitudes among 6th through 8th grade students would become more similar to their friends' intergroup contact attitudes over time. Among adolescents, peers and friends serve as salient social reference groups (Brown & Larson, 2009) and sources of information regarding ingroup norms and expectations (Aboud, 2005). Such influence has been found to relate to numerous interpersonal and psychological outcomes in school settings, including individuals' sense of social belongingness (Lerner & Steinberg, 2009), ethnic/racial identity beliefs (Rivas- Drake, Umaña- Taylor, Schaefer, & Medina, 2017), and attitudes about other groups (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). In the case of the current study, we took into account any confound between youths' intergroup attitudes and public regard perceptions, by modeling peer socialization influence on each (cf. Santos, Kornienko, & Rivas-Drake, 2017). More generally, we expected the school

context to be particularly encouraging of positive peer influence regarding intergroup context (i.e., authority sanction); the school's social-emotional learning program intentionally encourages the development of social competencies in a collaborative space (daily advisory periods) under the guidance of supportive authority figures. As the program is a universal, school-wide endeavor, authority sanction for positive intergroup relations may be manifest in arguably all sectors of the school.

Third, we considered the relationship between each of the previous aims in concert: ingroup/outgroup membership, friend selection, and intergroup contact attitudes. For our third hypothesis, we predicted that as youths' friends feel increasingly valued and accepted by outgroup members, the willingness to engage in cross-group interactions would increase both for 6th through 8th grade students and their friends (e.g., Tropp & Bianchi, 2006); conversely, if youths' friends felt more devalued over time, they and their friends' willingness to engage across groups would decrease accordingly. In other words, we explored the role of intergroup contact attitudes as a moderator, influencing the extent to which youths' report outgroup friendships. We predicted that youth with more positive intergroup contact attitudes will be more likely to report outgroup friendships than youth with less positive intergroup contact attitudes. Given the ethnically and racially heterogeneous student population available at the study school, we also explored this prediction across groups while accounting for immigrant heritage; thus, we explored the extent to which intergroup contact attitudes may differentially influence diverse youth populations.

Method

Participants

Data were drawn from a larger study of social-emotional climate in an urban Midwest U.S. middle school. To be included in the analysis, students must have been present and have a valid score for intergroup contact attitudes during at least one of the three data collection waves. Thirty-three of the students surveyed were excluded because they did not have valid intergroup contact attitudes and public regard data for at least one wave (94% of students were retained). The middle school consists of 6th, 7th, and 8th grade students, and the analytical sample includes three grade cohorts: cohort 1 is 7th grade students at time 1 ($n = 181$); cohort 2 is 6th grade students at time 1 ($n = 191$); cohort 3 is students who entered the study at time 2 as 6th graders (i.e., 5th graders during time 1; $n = 152$). Times 1, 2, and 3 of the study took place during the spring of 2014, fall of 2014, and spring of 2015, respectively, and data were collected from students attending the school at each point of data collection. Students were on average 12 years old ($M_{\text{ageT1}} = 11.87$, $SD = .72$; $M_{\text{ageT3}} = 12.41$, $SD = .95$). The sample comprised Asian American and Pacific Islander (9%), African American (28%), Latino (13%), Native American (1%), White (31%), Other (5%), and Multiracial (11%) students. This ethnic-racial distribution is representative of the school population, with each sample group proportion within 2% of its proportion within the whole school at time 1. At time 1, 19% of students reported having an immigrant mother, and at time 2, about 28% did so. According to publicly available aggregated school data, approximately 52% of students were eligible for free or reduced-price lunch. Rates of missing data across waves were quite low (see Table 2). Although we do not have recruitment rates for time 1, we do know that at time 2 (i.e., 2014-2015 school year), 92% of students attending the school participated in the survey. Tests comparing students present at all eligible waves to those missing one or more waves revealed no significant differences across study variables. The only difference we found was that 6th and 7th graders were more likely to be

missing a wave of data than 5th graders (i.e., those who entered the study as 6th graders at T2); this is not surprising since the latter had one less wave of data collection.

Procedure

Student surveys were self-administered during homeroom; students were assured of the confidentiality of their responses (i.e., with the statement that “your individual answers will be private and will never be shared with anyone at this school” on the survey cover sheet). Surveys were de-identified such that all names were removed and replaced with ID codes by an external consultant who is not affiliated with the research team or with the school. After this de-identification process, the surveys were given to the university team for analysis. The project was determined to be Exempt by the University of Michigan IRB.

Measures

Intergroup contact attitudes. Phinney’s (1992) six-item Other Group Orientation scale (T1-T3 α range = .76 - .80) was used to assess students’ personal interest in and valuing of intergroup contact—precisely what the scale was designed to assess. The items are as follows: “I like meeting and getting to know people from ethnic groups other than my own;” “I enjoy being around people from ethnic groups other than my own;” “I sometimes feel it would be better if different ethnic groups didn’t try to mix together” (reverse-coded); “I often spend time with people from ethnic groups other than my own;” “I don’t try to become friends with people from other ethnic groups” (reverse-coded); and “I am involved in activities with people from other ethnic groups” (1 = Strongly Disagree, 5 = Strongly Agree). All items were coded such that higher values on this scale indicate more positive intergroup contact attitudes.

Peer networks. To identify influential peers, youth were asked to list their closest friends, or who they “hang around with and talk to the most” in their grade, which is a typical network

name generation approach among youth in this age group (Ryan, 2001); this definition also permits us to examine the kind of friendship identified by Davies and colleagues (2011) as most consistently related to intergroup attitudes. Students could list “as many or as few” names; thus, there were no limits on nominations.

Covariates. Ethnic/racial category, gender, and mother’s immigrant generation were included as covariates to account for demographic attributes that are likely to underlie homophily among friends (McPherson et al., 2001; Moody, 2001); their inclusion diminishes the likelihood of spurious findings. All were self-reported by youth in a demographic portion of the survey. Students were asked to indicate which ethnic/racial labels they identified with in the demographic portion of the questionnaire (multiple responses permitted) as well as in an open-ended question just before items pertaining to public regard. From these responses, ethnic/racial categories were identified that corresponded to six categories available in the U.S. Office of Civil Rights 2011–2012 report of school demographics (<http://ocrdata.ed.gov/>) and a seventh category (“Other”) to accurately reflect students’ self-identification. Ethnic/racial categories were dummy coded 1 for a given group (e.g., Latino, African American, Asian American and Pacific Islander, Other, Multiracial, or White) and 0 for all others. Native American students were collapsed with the “Other” group due to the small number of students; thus, a total of five dummy codes were used for ethnic/racial category. Gender and mother’s immigrant status were reported by students. Gender was coded 1 for male and 0 for female. Mother’s immigrant generation was coded 1 for immigrant and 0 for U.S.-born. Grade in school was coded 1 for a given grade (i.e., sixth, seventh, or eighth) and 0 for all else, resulting in three dummy codes (and in the analyses, one is excluded as the reference group).

In addition to the aforementioned demographic covariates, students' public regard perceptions were included (Scottham, Sellers, & Nguyễn, 2008), which was assessed with 3 items in which youth reported their views of others' regard for their ethnic group (e.g., "People think that people of my ethnicity are as good as people from other ethnicities;" 1 = Strongly Disagree, 5 = Strongly Agree; (T1-T3 α range = .69 - .82). Higher values indicate more positive public regard. Finally, an indicator of which advisory (homeroom) period the student was in during year 2 was used to account for the likelihood that students who were in the same advisory would be more likely to be friends given 1) proximity and that 2) a significant component of the social-emotional program being implemented in the school was focused on having students develop meaningful relationships during advisory. The ethnic composition of homeroom periods largely mirrored the overall school. Using the index of qualitative variation (IQV), which represents the probability that any two randomly chosen students will be of a different race (Moody, 2001), classroom race/ethnic heterogeneity ranged from .66 to .77 with a mean of .72 (SD = .03).

Analytic Approach

We used a stochastic actor-oriented model, or SAOM (Snijders, van de Bunt, & Steglich, 2010), to model the co-evolution of the friendship network, intergroup contact attitudes, and public regard. The SAOM is a dynamic network model that helps understand friendship change over time while also allowing for endogenous change in individual attributes. The SAOM contains three functions or submodels, one to model network change (network function) and two behavior functions to model change in intergroup contact attitudes and public regard respectively. These submodels are estimated simultaneously to allow for changes in one (e.g., network change) to inform changes in the other (e.g., behavior change). Thus, as the network

changes, sources of peer influence on intergroup contact attitudes change, and conversely, as attitudes change, the network may change in response. An advantage of the SAOM is that it tests hypothesized friend selection mechanisms and peer influence net of one another (Veenstra, & Steglich, 2011).

Our analysis sought to test several hypotheses regarding selection and influence on intergroup contact attitudes. We begin by examining the effect of intergroup contact attitudes on friend selection using the network function. In this model, the dyad is the unit of analysis and the outcome is presence or absence of a friendship. Effects pertain to the intergroup contact attitudes of the person nominating a friend (ego) and the attitudes of the potential friendship nominee (alter). We include 5 direct effects related to intergroup contact attitudes on friend selection: a linear and square root transformation of ego's intergroup contact attitudes (these combine to allow for a nonlinear effect); a linear and square root transformation of alter's intergroup contact attitudes; and the cross-product of ego's and alter's intergroup contact attitudes. The ego effects capture how intergroup contact attitudes affect one's tendency to nominate friends; the alter effects capture how those attitudes affect one's tendency to be named as a friend; and, the cross-product assesses homophily net of these tendencies. In combination these effects test our first hypothesis, that adolescents select friends with similar intergroup contact attitudes. We include a similar set of effects to control for effects of public regard on friendship.

The SAOM also controls for several normative friend selection processes, which improves estimates of the effects of individual attributes (e.g., intergroup contact attitudes) on friend selection. These structural controls include effects for inertia in the distributions of incoming and outgoing nominations (indegree-popularity and outdegree-activity, respectively, with square-root transformations), the tendency to name friends who have nominated oneself

(reciprocity), and two forms of triadic effects. The first is a positive indicator of triad closure, or the tendency to name one's friends' friends as one's own friends (geometrically weighted edgewise shared partners, or GWESP). The second is a negative indicator of triad closure in the form of avoiding friendships to peers whose friends are not one's own (distance-2). The final structural term is an interaction between reciprocity and GWESP.

The network function specified several additional controls. We included a control for whether each pair of students was in the same homeroom class in year 2, measured at time 2 (same homeroom). We also included ego, alter, and same effects for sex (male=1). To measure homophilous selection on race/ethnicity we created a categorical measure and used the same effect to represent whether the students in each dyad fell in the exact same category. As a followup, we also used the dummy variables and included a separate same effect for each dummy variable (leaving dissimilar dyads as the reference group). We created an interaction effect between the same race/ethnicity effect(s) and ego's intergroup contact attitudes to test our third hypothesis, about attitudes moderating race/ethnic homophily.

The behavior functions for intergroup contact attitudes and public regard include a common set of controls for their distributions (linear and quadratic terms) and effects of individual attributes (effFrom). These include gender, race/ethnicity dummy variables, and mother's immigration status. In addition, we control for the effects of public regard and intergroup contact attitudes on one another. We specify peer influence, and test our second hypothesis, using the average similarity effect. This effect captures whether students tend to adopt levels of the respective behavior that either bring them or keep them close to the average of their nominated friends.

We used standard SAOM imputation techniques to treat missing data (Huisman & Steglich, 2008), which was largely due to panel nonresponse and restricted to network ties and behaviors. The data for the three cohorts was combined using the multigroup option within RSiena (Ripley et al., 2017). This approach models change over time separately for each of the three cohorts, and in so doing constrains parameter estimates to be equal for each cohort while prohibiting inter-grade friendships. The rates of change in friendships and behaviors were allowed to vary between cohorts and over time (via rate effects for each). Convergence for each model was acceptable as indicated by maximum convergence statistics of .15 or less. We achieved sufficient goodness-of-fit as indicated by the estimated models' ability to reproduce the distributions of several relevant summary statistics from the observed networks (see Appendix).

Results

Means and standard deviations by group and wave are provided in Table 1. On average, students reported fairly positive intergroup contact attitudes at each time point. Table 2 reports network structure and change across study waves. Students reported over 5 friendships on average, with means ranging from 4.5 to 5.8 across grades and waves. The friendship networks exhibited suitable levels of stability from wave to wave, with Jaccard indices ranging from .26 to .37.

Network Selection Controls

Table 3 presents results from the SAOM. We first discuss the network function, which modeled change in the friendship network over time. To provide intuition to the model we begin with controls and emphasize that effects are interpreted as their impact on creating or maintaining a friendship over time. The results for endogenous network structure are typical of SAOM models of friendship dynamics: friendships were unlikely outside of modeled selection

processes (negative outdegree); adolescents nominated peers who nominated them (positive reciprocity); adolescents named friends who were friends of their current friends (positive GWESP); the effects of reciprocity and GWESP were not additive (negative reciprocity by GWESP); adolescents avoided ties to peers they didn't share friends with (negative distance 2); adolescents were more likely to name friends whom other students also named as friends (positive indegree popularity); and adolescents who named many friends were less likely to name additional friends (negative outdegree activity). The model also showed that adolescents in the same homeroom were more likely to be friends. Post-hoc tests revealed great variability in such selection across grades, thus we freed this effect to vary accordingly (rows 24-27). Males were somewhat less likely to name friends than females; however both males and females were more likely to name friends of the same gender. Lastly, the rate effects are of little substantive interest as they index the number of opportunities for change between observations (this is also true for the behavior functions).

Effects of Intergroup Attitudes on Friend Selection

We now move to our test of how intergroup contact attitudes affect friendship, including whether similarity drives friendship. Results for intergroup contact attitudes and friend selection appear in rows 13-17 of Table 3. The positive coefficient for the alter effect suggests that youth with more positive intergroup contact attitudes are more likely than youth with less positive intergroup contact attitudes to be selected as a friend. The significant alter squared term is indicative of a nonlinear selection process – the effect of intergroup contact attitudes on being selected as a friend tapers off at more extreme levels. The positive intergroup contact attitudes ego effect suggests youth with more positive intergroup contact attitudes are more likely to name friends than youth with less positive intergroup contact attitudes. There is no evidence that this

effect is nonlinear. The non-significant ego X alter coefficient reveals no evidence of a tendency toward homophily on intergroup contact attitudes net of the other effects in the model. Thus, we find no support for the hypothesis that adolescents prefer friends with similar levels of intergroup contact attitudes. This does not mean that adolescents do not select similar friends – as we describe in more detail below – just that similarity is not the basis for selection (cf., Schaefer et al., 2018).

To more fully understand the joint impact of ego and alter intergroup contact attitudes on friend selection we calculated the predicted contribution to the friend selection function across the full range of ego and alter values for such attitudes (Figure 1). Considering the joint values of ego and alter is important, as the model indicates that both ego's and alter's intergroup contact attitudes mattered for network structure. Figure 1 shows that friendships are least likely when ego and alter both hold less positive intergroup contact attitudes, and most likely when ego and alter hold more positive attitudes, all else being equal. In other words, the effect of intergroup contact attitudes is to bring peers with similarly high levels together into friendship with a greater likelihood than peers with lower levels. Importantly, this is not attributable to a preference for homophily. Instead, higher intergroup contact attitude youth are both more attractive as friends and more sociable in terms of their nominations.

We tested the same set of 5 selection effects for public regard and found none to be significant. These are shown in rows 18-22 of Table 3. Thus, public regard has no discernable effect on friend selection dynamics.

Effects of Intergroup Attitudes on Ethnic/Racial Homophily

We now turn to the question of whether intergroup contact attitudes and public regard moderate race/ethnic homophily. In particular, we hypothesized that adolescents with more

positive intergroup contact attitudes and public regard would be less likely to prefer same race/ethnicity friends (or more open to friends of a different race/ethnicity). Our model reveals, first of all, that race/ethnic selection homophily is present (row 31). Adolescents were 29% ($\exp[.257]$) more likely to nominate a friend of the same race/ethnicity than someone of a different race/ethnicity, all else being equal. To offer perspective, we turn to Moody's 2001 study of racial friendship segregation across 130 schools in the Add Health data. Moody found that more heterogeneous schools had higher levels of race homophily, though tapering off for the most diverse schools. Using equivalent measures as Moody, our observed school had an overall IQV of .76. Moody reports 18 Add Health schools with a heterogeneity index from .7 to .8 (all other schools were less heterogeneous). In those 18 schools, adolescents were approximately 82% more likely on average to nominate a same race vs. a cross-race friend, net of other selection factors. In comparison, our main effect of 29% is relatively low, lower than any of the 18 Add Health schools.

We test for moderation of the race homophily effect by creating an interaction between the same race/ethnicity effect and effects for ego intergroup contact attitudes and public regard respectively. The interaction with intergroup contact attitudes was negative and significant (row 33). This effect offers evidence that youth with more positive intergroup contact attitudes evinced a weaker preference for same race/ethnic friends than youth with less positive attitudes. To interpret this, we calculated the predicted contribution to the network function based on ego intergroup contact attitudes for same and cross-race/ethnic friendships (Figure 2). The plot shows that for adolescents with less positive intergroup contact attitudes, the preference for same race friends is stronger than for cross-race friends. At the lowest level, the predicted odds of a same race friendship are 250% greater than the odds of a cross-race friendship. This difference

narrows as ego intergroup contact attitudes increases. Ultimately, adolescents with the most positive intergroup contact attitudes were largely indifferent between choosing friends of the same or a different race/ethnicity (predicted odds differ by less than 5%). Significant differences were only observed in the mid-range of intergroup contact attitudes (note that only 1.3% of students had intergroup contact attitudes in the 1-2 range, where differences were non-significant).

Effects of Intergroup Attitudes on Race/Ethnic Homophily by Group

We further investigated the moderating effect of intergroup contact attitudes with a model that separated the race/ethnic homophily effect by group (Table 4). We included 6 effects to represent homophilous selection for each group. We also included ego and alter effects for each race/ethnic group, though due to the large number of such effects we used score tests to prospectively test whether the inclusion of each effect would impact model fit. Four of these effects had significant score tests and were incorporated. To begin, we observe that Latino/a students were more likely to be named as friends than students from other groups (Table 4, row 37), while there was a borderline tendency for White students to be named less often (row 39). Turning to homophily we find that the effects of same race/ethnicity on friendship were significant for Black, Latino/a, and White youth (Table 4, rows 32-34). Thus, youth from each group were more likely to form or maintain friendships with same race/ethnic peers relative to youth who were dissimilar. Our test for moderation reveals that the strongest effects were observed for Black and Latino/a youth (Table 4, rows 48-49), with non-significant effects for Asian, White, Multiracial, and Other students. By comparison, public regard did not moderate the effect of race homophily on friendship for either the combined (Table 3, row 32) or disaggregated race/ethnic effect (Table 4, rows 41-46). Thus, Black and Latino/a youth with

more positive intergroup contact attitudes were less likely than youth in other groups to select same race/ethnicity friends.

Intergroup Attitudes as a Mediator

We had speculated that homophily in intergroup contact attitudes might explain any appearance of public regard homophily (i.e., the effect of public regard homophily on friendship is mediated by homophily in intergroup attitudes). The lack of either intergroup contact or public regard homophily casts doubt on this possibility. However, such null effects could arise if the two attitudes were too highly correlated. Thus, to investigate further we estimated a reduced version of the model reported in Table 3 that excluded the intergroup attitude effects from the network function. Our expectation was premised on the presence of public regard homophily in this model specification. However, public regard did not have a significant effect on friendship in the reduced model, thus it is not possible for homophily in intergroup contact attitudes to account for this effect.

Change in Intergroup Attitudes

We now turn to the behavior functions in Table 3 that predict change in intergroup contact attitudes and public regard over time. We begin with the function for intergroup contact attitudes (rows 34-49). The positive linear effect combined with a non-significant quadratic term indicates that adolescents tended to move toward or remain at higher levels of intergroup contact attitudes over time. The negative effects of other race/ethnicity and immigrant mother suggest adolescents with these characteristics had trends toward lower attitudes on average. We found no evidence that public regard affects change in intergroup contact attitudes.

Moving to public regard (rows 50-65), the non-significant linear term combined with a negative quadratic term reflect a unimodal distribution with students drawn toward the values of

3 and 4 over time. The positive effects for male and immigrant mother suggests that such students tended to have more positive public regard over time. Lastly, we found that intergroup contact attitudes predicted change in public regard. In particular, adolescents with more positive intergroup contact attitudes were more likely to increase or remain at higher levels of public regard.

Of greatest interest was whether youth influence one another's intergroup contact attitudes. The behavior functions tested for peer influence on intergroup contact attitudes and public regard. For both, we find significant effects of friends' attitudes on one's own behavior (Table 3, effects 41 and 57, respectively). These effects indicate that adolescents whose friends have higher levels of intergroup contact attitudes or public regard will themselves tend to either adopt higher levels or remain at higher levels, relative to adolescents whose friends have lower levels of the respective behavior. We sought to extend these analyses by testing how influence differs for increasing versus decreasing levels of the behavior (e.g., Haas & Schaefer, 2014), however we do not have sufficient power to detect such effects (i.e., models with such a specification did not converge).

Discussion

Given the implications of having a diverse friendship or contact network for developmental outcomes and intergroup relations, more generally, investigation of peer-related processes that make youth "contact ready" is vital (Turner & Cameron, 2016). Using a novel approach to the study of intergroup dynamics among youth, the present study is a first step toward understanding how youth construct, and potentially mutually reinforce, norms around intergroup contact in an ethnically and racially heterogeneous setting. Our analysis produced several key findings, which are buttressed by the use of an implicit measure to study intergroup

attitudes within a peer network (system). This enables us to overcome the limitations of previous studies that have relied on measures of perceived peer norms. First, adolescents chose friends based upon their joint values of intergroup contact attitudes. Second, we observed that intergroup contact attitudes moderated the strength of friend selection based on same race/ethnicity. In addition, we found that students' intergroup contact attitudes and their sense of public regard (how others view their ethnic/racial group) were related over time. Finally, we found evidence of peer influence on intergroup contact attitudes. These results point to a system where adolescents prefer to befriend more open-minded peers and, in turn, influence one another on intergroup relations. Taken together, they suggest the presence of school-level norms to promote positive intergroup attitudes and that such attitudes may be "contagious."

In this school, adolescents with more positive intergroup contact attitudes were more popular. Specifically, these students were more likely to be involved in friendships overall, and their friendships were most likely to be with other youth who had similarly positive intergroup attitudes. In a heterogeneous setting, it is socially adaptive for youth to prefer to befriend peers with similar intergroup contact attitudes who may be part of another group in order to cross racial boundaries to make friendships. Related to this point, in this setting, it was indeed the case that students with more positive intergroup contact attitudes were less likely to select friends of the same race/ethnicity than those with less positive attitudes; that is, they had more cross-racial friends. Thus, the views reflected by intergroup contact attitudes were evidenced within adolescents' friend selection behavior. Future research should directly test potential mediators to better understand adolescents' tendency to prefer friends with similarly positive intergroup contact attitudes.

In this study, we considered that homophily in intergroup contact attitudes might be confounded with youths' sense of others' regard for their group (public regard). We found that intergroup contact attitudes predicted change in public regard over time, but the reverse was not true. Specifically, adolescents with more positive intergroup contact attitudes were more likely to increase or remain at higher levels of public regard. It is possible that youth become more capable of gauging public regard (e.g., Quintana, 1998) in part through increased interactions with peers of other ethnic/racial groups, which is more likely in this context when youth have more favorable dispositions toward having such interactions. Moreover, we found evidence of peer influence on intergroup contact attitudes while taking into account youths' public regard perceptions. In particular, students' intergroup contact attitudes tended to remain or become more like those of their friends over time (influence effect). Although past research has found that peers influence one another's public regard (Santos, Kornienko, & Rivas-Drake, 2017) and that intergroup contact influences intergroup attitudes over time (Wölfer, Schmid, Hewstone, & van Zalk, 2016), the results for intergroup contact attitudes are new and represent an extremely important finding.

Implications of Understanding Intergroup Relations in Peer (and School) Contexts

Taken together, the present results provide insight to the role of peer networks for shaping intergroup relations, and offer promise moving forward. Findings point to a social system within a school where adolescents prefer to befriend more open-minded peers and, in turn, adolescents influence one another on intergroup contact attitudes. This accords with several previous findings that underscore the important role of peers. First, prior work suggests that adolescents within the same peer group serve as socializing agents to each other promoting within-group similarity in other ethnic-racial beliefs (e.g., Rivas-Drake et al., 2017) and, more

generally, serve as important social reference groups providing prescriptive and descriptive information about social reality (e.g., Turner, 1991). Second, using different methodology, adolescents within the same peer group have been shown to share similar norms regarding intergroup relations and contact, and these peer norms are known to influence adolescents own intergroup attitudes and behaviors (e.g., Aboud, 2005). Adolescents who either have positive direct or extended peer contact (i.e., an ingroup friend who has an outgroup friend) may also have reduced intergroup anxiety, perceptions of outgroup collective threat, and a higher likelihood of including outgroup members in the self, all of which relate to positive intergroup relations (e.g., Turner et al., 2008). Finally, studies have shown that both direct and extended contact promote positive social norms regarding cross-ethnic friendship, which then result in improved outgroup attitudes among majority children (e.g., Cameron, Rutland, & Brown, 2007; Feddes, Noack, & Rutland, 2009).

Overall, the results are also consistent with previous research on the attitudes and behavior of early adolescents that finds this developmental stage noteworthy for the influence of peers (e.g., Brown, 1990). Importantly, this peer influence extends the concept of social group norms for cross-race interaction from the macro-level of race and culture to the micro-level of the school-based social network. Inclusive social norms have long been identified as an important facilitator in intergroup contact reducing prejudice (e.g., Allport, 1954). The current study highlights that even when macro-level (i.e., school) conditions encourage intergroup contact, negative influence at the micro-level (i.e., peers who do not have positive intergroup contact attitudes) may work against such norms by reducing adolescents' positive attitudes regarding intergroup contact. Indeed, the normative beliefs of peers may be especially important for adolescents because reference groups are "psychologically and socially meaningful to

individuals” (Leach & Vliek, 2008, p. 541). Peer norms also determine how individual peer members are evaluated. For example, Castelli and colleagues (2007) discovered that children who paired in cross-ethnic dyads voluntarily were evaluated more negatively by ingroup peers than children who were assigned to be in cross-ethnic dyads by a teacher.

This pattern of results demonstrates the importance of peer-level strategies in efforts to improve intergroup contact and inevitably intergroup relations. With an ethnically and racially heterogeneous school setting like the one sampled here, a focus on peer interactions may highlight unique intergroup attitude changes not necessarily captured by broader strategies. For example, it is possible for school-based strategies that encourage intergroup contact to be met with public acceptance but not necessarily private acceptance (i.e., normative social influence). Thus, adolescents may adhere and comply with those norms without internalizing them. However, peer-based strategies might influence both private and public acceptance (e.g., informational social influence) leading to internalized social norms regarding intergroup contact. Such strategies have been found to be effective in the past. For instance, Paluck and Shepherd (2012) found that school interventions that target the behaviors of highly socially connected students will subsequently change the attitudes and behaviors of their peers.

Limitations and Future Directions

Although the present study provides novel insights into intergroup relations among youth, there are important caveats that must be considered in drawing conclusions. One that could be addressed in future research is our lack of data on students' residence or individual-level data on their SES, which could play a role in homophily observed between students. Two other salient issues regard the school site. It was an ethnically and racially heterogeneous setting, which is becoming less common in the U.S. and thus limits the generalizability of the present findings. In

addition, the school was actively implementing a social-emotional learning program to promote a positive diversity climate among adults and youth in the building. Different results might emerge in heterogeneous schools without such efforts to promote positive social norms or with high levels of conflict, more generally. Yet, this study provides support for the development of future research in which these limitations can be addressed with a multi-site design to include schools that vary in terms of heterogeneity and climate around diversity issues.

An additional limitation is that we did not have the power to determine whose influence matters more – whether friends with more positive intergroup attitudes youth "pull" those with less positive attitudes up, or vice versa – but the selection effects offer some clues in this regard. In particular, students with more positive intergroup contact attitudes had an elevated friendship likelihood compared to youth with less positive attitudes, suggesting greater social acceptance. Since social acceptance enhances one's influence (Rambaran, Hopmeyer, Schwartz, Steglich, Badaly, & Veenstra, 2017), it stands to reason that the strongest source of influence was likely youth with more positive attitudes. Assuming that influence is from youth with more to those with less positive intergroup attitudes, then these results suggest that building such attitudes may be a viable means to reduce racial/ethnic friendship segregation. This would occur as friends influence one another to be more open, and those open attitudes translate into more cross-group friendships. Future work in this area should further investigate these mechanisms in larger samples.

Conclusion

Adolescents' attitudes toward interacting with ethnically diverse peers are of critical importance for their long-term academic and social experiences. This study offers new insights to the power of peer networks for shaping intergroup relations in an ethnically and racially

diverse school, where there are ample opportunities for cross-group interaction and friendship. As we have seen, the findings speak to the complex associations between adolescents' own dispositions toward intergroup contact and the social system in which these dispositions may be enacted. By examining attitudes pertinent to ethnicity and race in a sample that reflects a cross-section of ethnic-racial groups, the study also addresses recent calls to attend to issues of equity and justice in developmental science (Killen, Rutland, & Yip, 2016). Future studies should continue investigations into the interplay of macro- and micro-level factors among diverse groups, so that researchers and educators may obtain additional insights into adolescents' social behaviors and attitudes in ethnically and racially diverse contexts.

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Table 1

Means and standard deviations for intergroup contact attitudes by ethnic-racial group

	Time 1	Time 2	Time 3
AAPI	3.93 (.59)	4.10 (.64)	4.33 (.63)
Black	3.96 (.69)	3.93 (.79)	4.14 (.72)
Latino	3.89 (.84)	3.93 (.65)	4.12 (.63)
White	3.95 (.71)	3.96 (.70)	4.23 (.65)
Other/Native Am	3.97 (.61)	3.97 (.62)	3.72 (.82)
Multiracial	3.99 (.63)	4.08 (.64)	4.35 (.60)
Overall	3.95 (.70)	3.97 (.70)	4.18 (.68)

Note. AAPI = Asian American and Pacific Islander. Am = American.

Table 2

Network statistics by cohort and wave

	5 th Grade	6 th Grade	7 th Grade
N	152	191	181
Wave 1	--	170	167
Wave 2	151	183	164
Wave 3	147	175	161
Change			
Left Wave 1-2	--	7	16
Left Wave 2-3	5	9	10
Joined 1-2	151	20	13
Joined 2-3	1	1	7
Average degree			
Wave 1	--	4.60	5.46
Wave 2	4.50	4.91	5.80
Wave 3	5.07	5.13	5.08
Jaccard			
Wave 1-2	--	.262	.295
Wave 2-3	.276	.316	.374

Table 3. SAOM Estimates for Model Constraining Same Race/Ethnic effects to be equal for each race/ethnic group

		b	SE	
Network (Friendship) Function				
1	Rate, cohort 1 T1-T2	13.655	0.866	***
2	Rate, cohort 1 T2-T3	12.211	0.868	***
3	Rate, cohort 2 T1-T2	12.289	0.848	***
4	Rate, cohort 2 T2-T3	15.078	0.941	***
5	Rate, cohort 3 T2-T3	17.259	1.444	***
6	Outdegree	-1.949	0.139	***
7	Indegree - popularity (sqrt)	0.090	0.047	†
8	Outdegree - activity (sqrt)	-0.250	0.026	***
9	Reciprocity	2.317	0.097	***
10	Transitivity (GWESP)	1.301	0.070	***
11	Reciprocity X Transitivity	-0.944	0.102	***
12	Number of actors at distance 2	-0.142	0.019	***
13	Intergroup contact attitude alter	0.082	0.045	†
14	Intergroup contact attitude alter squared	-0.142	0.065	*
15	Intergroup contact attitude ego	0.181	0.064	**
16	Intergroup contact attitude ego squared	-0.055	0.075	
17	Intergroup contact attitude ego X alter	-0.085	0.080	
18	Public regard alter	0.017	0.032	
19	Public regard alter squared	0.038	0.037	
20	Public regard ego	-0.021	0.048	
21	Public regard ego squared	0.077	0.049	
22	Public regard ego X alter	0.058	0.051	
23	Same homeroom	0.638	0.037	***
24	Same homeroom X cohort 1 T1-T2	0.472	0.099	***
25	Same homeroom X cohort 1 T2-T3	-0.443	0.110	***
26	Same homeroom X cohort 2 T1-T2	0.367	0.101	***
27	Same homeroom X cohort 2 T2-T3	0.155	0.092	†
28	Male alter	-0.018	0.036	
29	Male ego	-0.088	0.041	*
30	Male same	0.265	0.032	***
31	Race/ethnicity same	0.257	0.033	***
32	Public regard ego X race/ethnicity same	-0.015	0.069	
33	Intergroup contact attitude ego X race/ethnicity same	-0.216	0.088	*
Intergroup Contact Attitude Function				
34	Rate, cohort 1 T1-T2	1.033	0.225	***
35	Rate, cohort 1 T2-T3	1.214	0.285	***
36	Rate, cohort 2 T1-T2	1.674	0.355	***
37	Rate, cohort 2 T2-T3	0.980	0.188	***
38	Rate, cohort 3 T2-T3	1.636	0.333	***

39	Linear shape	0.349	0.087	***
40	Quadratic shape	-0.174	0.219	
41	Average similarity	3.833	2.023	†
42	Public Regard	0.206	0.176	
43	Male	-0.096	0.178	
44	Asian	0.258	0.364	
45	Black	-0.226	0.222	
46	Latino	-0.098	0.283	
47	Other race/ethnicity	-0.667	0.362	†
48	Multiracial	-0.312	0.290	
49	Mother's immigration status	-0.385	0.215	†
	Public Regard Function			
50	Rate, cohort 1 T1-T2	1.871	0.384	***
51	Rate, cohort 1 T2-T3	2.234	0.563	***
52	Rate, cohort 2 T1-T2	2.764	0.566	***
53	Rate, cohort 2 T2-T3	1.723	0.309	***
54	Rate, cohort 3 T2-T3	1.877	0.369	***
55	Linear shape	0.002	0.057	
56	Quadratic shape	-0.224	0.125	†
57	Average similarity	3.880	1.539	*
58	Intergroup Contact Attitude	0.575	0.163	***
59	Male	0.425	0.134	**
60	Asian	0.225	0.261	
61	Black	-0.121	0.157	
62	Latino	-0.265	0.213	
63	Other race/ethnicity	-0.368	0.277	
64	Multiracial	0.137	0.205	
65	Mother's immigration status	0.359	0.163	*

Note. SE = Standard error. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. Maximum Convergence Ratio = 0.220

Table 4. SAOM estimates for model distinguishing race/ethnic effects by group

		b	SE	
Network (Friendship) Function				
1	Rate, cohort 1 T1-T2	13.602	0.790	***
2	Rate, cohort 1 T2-T3	12.179	0.895	***
3	Rate, cohort 2 T1-T2	12.313	0.862	***
4	Rate, cohort 2 T2-T3	15.101	1.081	***
5	Rate, cohort 3 T2-T3	17.003	1.388	***
6	Outdegree	-2.392	0.155	***
7	Indegree - popularity (sqrt)	0.095	0.047	*
8	Outdegree - activity (sqrt)	-0.248	0.028	***
9	Reciprocity	2.312	0.093	***
10	Transitivity (GWESP)	1.302	0.069	***
11	Reciprocity X Transitivity	-0.933	0.104	***
12	Number of actors at distance 2	-0.143	0.020	***
13	Intergroup contact attitude alter	0.083	0.043	†
14	Intergroup contact attitude alter squared	-0.131	0.058	*
15	Intergroup contact attitude ego	0.572	0.247	*
16	Intergroup contact attitude ego squared	-0.047	0.073	
17	Intergroup contact attitude ego X alter	-0.091	0.082	
18	Public regard alter	0.023	0.032	
19	Public regard alter squared	0.036	0.039	
20	Public regard ego	-0.060	0.185	
21	Public regard ego squared	0.072	0.049	
22	Public regard ego X alter	0.053	0.053	
23	Same homeroom	0.640	0.035	***
24	Same homeroom X cohort 1 T1-T2	0.474	0.099	***
25	Same homeroom X cohort 1 T2-T3	-0.441	0.106	***
26	Same homeroom X cohort 2 T1-T2	0.377	0.102	***
27	Same homeroom X cohort 2 T2-T3	0.164	0.093	†
28	Male alter	-0.015	0.036	
29	Male ego	-0.088	0.043	*
30	Male same	0.255	0.031	***
31	Asian same	0.031	0.051	
32	Black same	0.187	0.035	***
33	Latino/a same	0.248	0.052	***
34	White same	0.089	0.036	*
35	Other race/ethnicity same	0.046	0.056	
36	Multiracial same	0.078	0.044	†
37	Latino/a alter	0.110	0.054	*
38	Latino/a ego	0.047	0.062	
39	White alter	-0.073	0.038	†
40	White ego	-0.062	0.042	

41	Public regard ego X Asian same	-0.026	0.107	
42	Public regard ego X Black same	0.089	0.070	
43	Public regard ego X Latino/a same	0.049	0.092	
44	Public regard ego X White same	0.021	0.071	
45	Public regard ego X Other race/ethnicity same	-0.053	0.118	
46	Public regard ego X Multiracial same	-0.007	0.083	
47	Intergroup contact attitude ego X Asian same	-0.090	0.140	
48	Intergroup contact attitude ego X Black same	-0.204	0.092	*
49	Intergroup contact attitude ego X Latino/asame	-0.205	0.118	†
50	Intergroup contact attitude ego X White same	-0.128	0.096	
51	Intergroup contact attitude ego X Other race/ethnicity same	0.081	0.157	
52	Intergroup contact attitude ego X Multiracial same	-0.090	0.111	
	Intergroup Contact Attitude Function			
53	Rate, cohort 1 T1-T2	1.036	0.224	***
54	Rate, cohort 1 T2-T3	1.219	0.311	***
55	Rate, cohort 2 T1-T2	1.670	0.343	***
56	Rate, cohort 2 T2-T3	0.978	0.192	***
57	Rate, cohort 3 T2-T3	1.635	0.337	***
58	Linear shape	0.350	0.083	***
59	Quadratic shape	-0.170	0.201	
60	Average similarity	3.889	1.771	*
61	Public Regard	0.203	0.176	
62	Male	-0.092	0.178	
63	Asian	0.261	0.365	
64	Black	-0.231	0.225	
65	Latino	-0.100	0.290	
66	Other race/ethnicity	-0.675	0.385	†
67	Multiracial	-0.325	0.288	
68	Mother's immigration status	-0.385	0.216	†
	Public Regard Function			
69	Rate, cohort 1 T1-T2	1.881	0.410	***
70	Rate, cohort 1 T2-T3	2.242	0.574	***
71	Rate, cohort 2 T1-T2	2.752	0.707	***
72	Rate, cohort 2 T2-T3	1.717	0.324	***
73	Rate, cohort 3 T2-T3	1.882	0.421	***
74	Linear shape	0.000	0.059	
75	Quadratic shape	-0.226	0.124	†
76	Average similarity	3.869	1.651	*
77	Intergroup contact attitude	0.579	0.175	***
78	Male	0.426	0.133	**
79	Asian	0.220	0.269	
80	Black	-0.119	0.156	
81	Latino	-0.261	0.210	

82	Other race/ethnicity	-0.373	0.280
83	Multiracial	0.135	0.204
84	Mother's immigration status	0.360	0.164 *

Note. SE = Standard error. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. Maximum Convergence Ratio = 0.154

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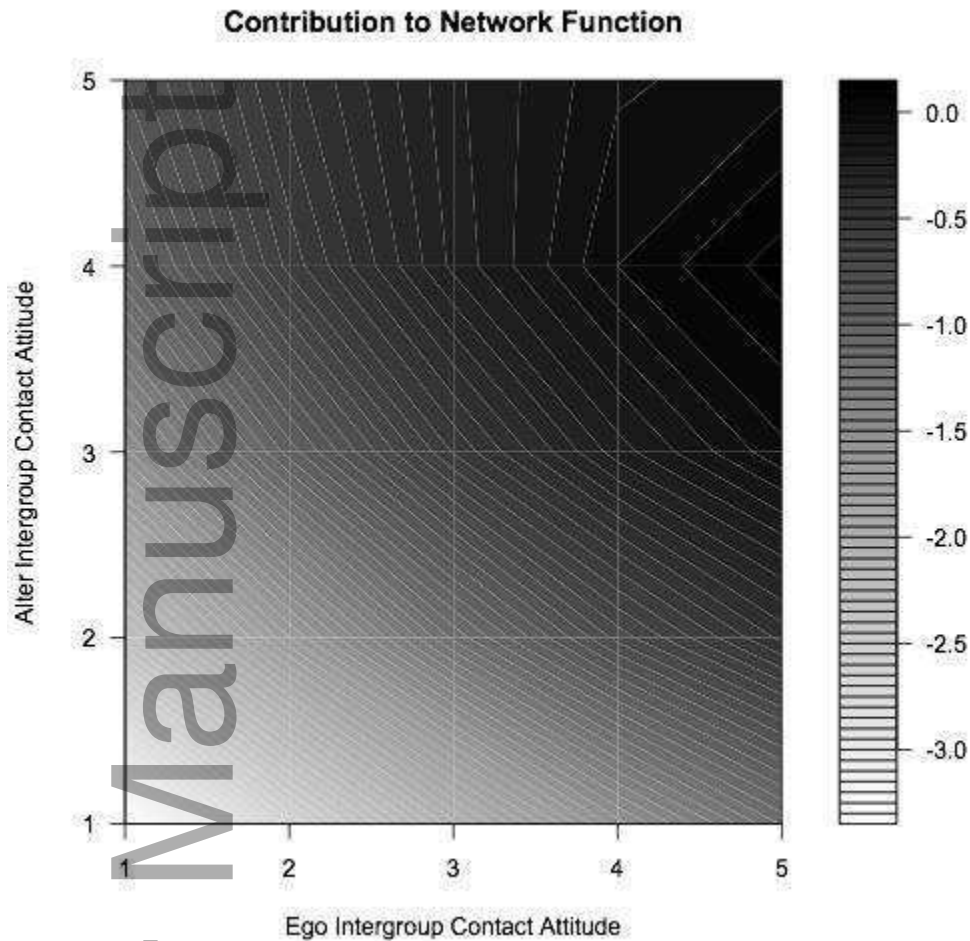


Figure 1. Predicted contribution to network function based on joint intergroup contact attitudes (i.e., Other Group Orientation; OGO) of ego (nominator) and alter (nominee). Values represent the total contribution of OGO selection effects to the network function, irrespective of other model effects. Higher (darker) values indicate a greater likelihood of a friendship occurring. Specifically, given a dyad with a predicted contribution one unit higher than another, the odds of the first dyad exhibiting a friendship are 2.7 ($\exp[1]$) times greater than the second, all else being equal.

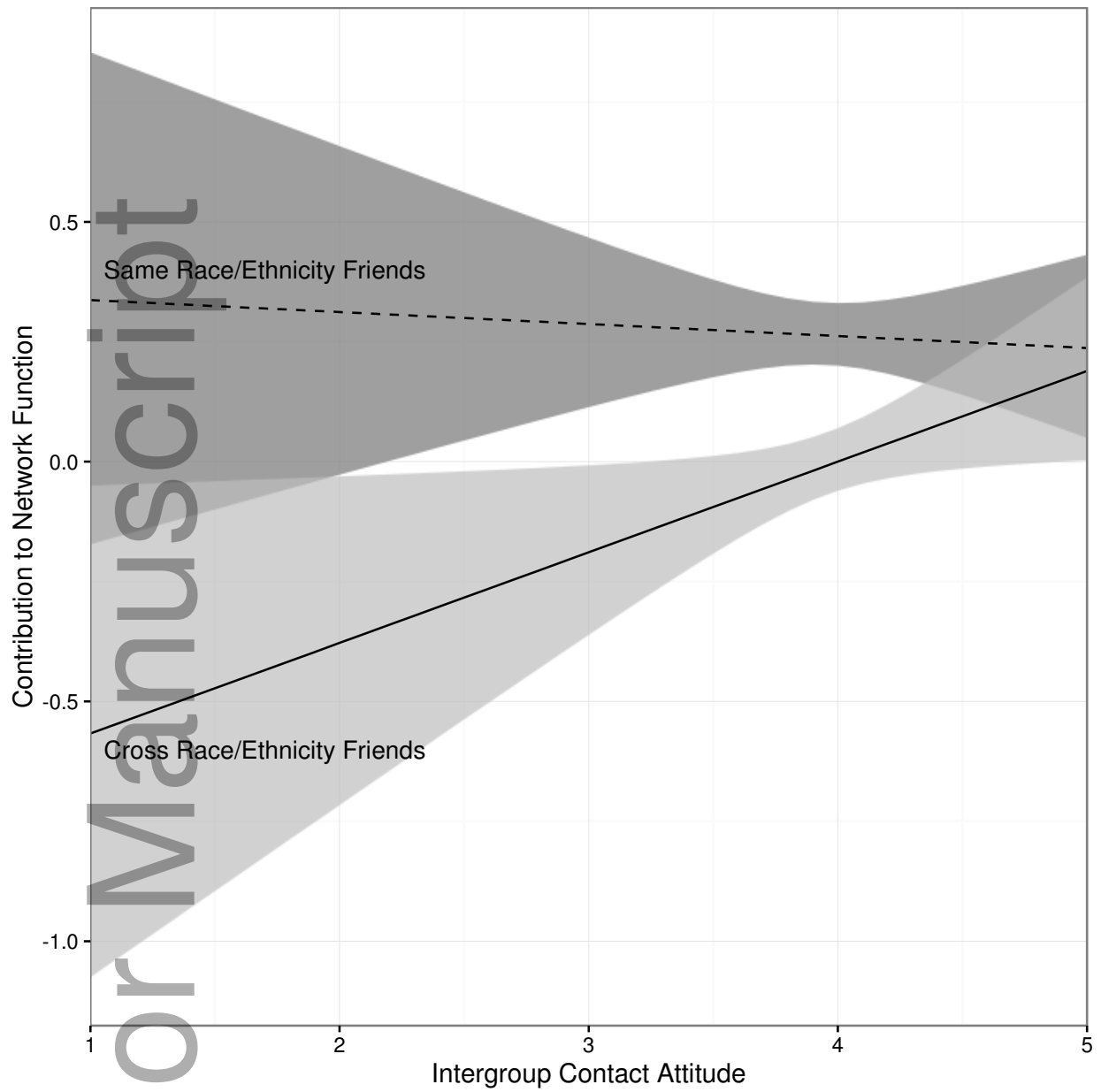


Figure 2. Predicted contribution to network function based on ego intergroup contact attitudes (i.e., Other Group Orientation) for same vs. cross race/ethnic friendships. Shaded areas represent 95% confidence intervals.