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# Perceived Norms and Classroom Ethnic Composition

Thomas Christopher O'Brien  
*University of Massachusetts Amherst*

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**Perceived Norms and Classroom Ethnic Composition**

A Thesis Presented by

THOMAS C. O'BRIEN

Submitted to the Graduate School of the University of Massachusetts Amherst in  
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PERCEIVED NORMS AND CLASSROOM ETHNIC COMPOSITION

A Thesis Presented

by

THOMAS C. O'BRIEN

Approved as to style and content by:

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Linda R. Tropp, Chair

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Brian Lickel, Member

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Aline G. Sayer, Member

---

Melinda Novak, Department Head

Department of Psychology

**ABSTRACT**

**PERCEIVED NORMS AND CLASSROOM ETHNIC COMPOSITION**

**FEBRUARY 2014**

**THOMAS C. O'BRIEN, A.B. WASHINGTON UNIVERSITY IN ST. LOUIS**

**M.S., UNIVERSITY OF MASSACHUSETTS AMHERST**

**Directed by: Professor Linda R. Tropp**

Students' perceptions of normative support for positive intergroup relations from teachers and school staff have been linked to a number of positive intergroup outcomes (Green, Adams, & Turner, 1988; Jugert, Noack, & Rutland, 2011). Additional studies testing the effects of ethnic proportions in classrooms show evidence for positive and negative intergroup outcomes between ethnic majority and ethnic minority students (e.g., Durkin et al., 2011; Vervoort, Scholte, & Scheepers, 2011). Still, research has yet to test simultaneously the effects of ethnic proportions in a classroom in conjunction with students' subjective perceptions of normative support for positive intergroup relations. With a sample of Latino and White students from 44 classrooms in two public middle schools the current research tests (1) how two sets of perceived school norms (promoting positive intergroup relations and promoting fairness) predict levels of comfort with outgroup members and greater interest in cross-ethnic friendship, and (2) whether proportions of outgroup members in the classroom moderates the relationships between each set of perceived norms and the outcomes.

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<sup>1</sup> This acronym refers to Perceived School Norms for Perceived Fairness taken from the School Interracial Climate Scale (Green, Adams, & Turner, 1988).

# CHAPTER 1

## INTRODUCTION

Engaging in contact with members of an outgroup (Allport, 1954; Pettigrew & Tropp, 2006) can lead to more positive relations between groups. According to intergroup contact theory, when people from different groups have positive interactions with one another they should come to feel less anxious towards one another, which in turn can predict less prejudice toward outgroups (Allport, 1954; Pettigrew & Tropp, 2008; Paolini, Hewstone, Cairns, & Voci, 2004).

However, some of the empirical evidence testing effects of intergroup contact -- and particularly those studies that use proportional indices to assess students' level of exposure to outgroup members in classrooms and schools -- has produced mixed results (Schofield & Hausmann, 2004). This work highlights that being in a classroom with more ethnic outgroup members does not necessarily mean that one will have contact with those outgroup members in such a way that would reduce prejudice and promote positive intergroup relations (Hallinan, 1982; Wilson & Rodkin, 2011). Related work has also shown that ethnic diversity in one's neighborhood, school, or workplace may not always correspond with more positive contact experiences between groups (Pettigrew, Wagner, & Christ, 2010). As such, schools and classrooms may be desegregated, but children's social relations may not be fully integrated such that students from diverse backgrounds are becoming friends with one another (Moody, 2001; Wilson & Rodkin, 2011). Moreover, contrary to what contact theory would predict, other theoretical frameworks suggest that greater proportions of outgroup members in one's social environment may actually provoke more negative attitudes toward that outgroup (Scheepers, Gijssberts, &



Coenders, 2002; Vervoort, Scholte, & Scheepers, 2011). For example, Wilson and Rodkin (2011) reported that African American children in classrooms with fewer African American classmates had more segregated friendships and peer groups.

### **Potential Benefits of Ethnic Diversity in the Classroom**

Nonetheless, a number of other studies have shown positive effects of greater proportions of different ethnic groups for improving intergroup relations in school settings (Hallinan & Teixeira, 1987; Khmelkov & Hallinan, 1999). Classrooms may be especially important contexts for studying the effects of intergroup contact among children and adolescents. In many ways, classrooms can promote optimal conditions for contact (Allport, 1954), to the extent that students work on assignments cooperatively, recognize common authorities in teachers and school staff, and share equal status as students in the classroom (Schofield & Hausmann, 2004). More diverse classrooms also foster opportunities for the development of cross-group friendships (Khmelkov & Hallinan, 1999), a particularly powerful form of contact for reducing prejudice (Pettigrew, 1998; Pettigrew & Tropp, 2006) and for attenuating the anxiety people often feel in cross-group interactions (Page-Gould, Mendoza-Denton, & Tropp, 2008). Although several positive outcomes of cross-group friendships have been established empirically (Pettigrew & Tropp, 2006; Davies, Tropp, Aron, Pettigrew, & Wright, 2011), less is known about the factors that lead to cross-group friendships.

### **Structural and Subjective Predictors of Cross-Group Friendships**

Some studies have begun to investigate both structural factors (Hallinan, 1985; Schofield, Hausmann, Feifei, & Woods, 2011) and subjective factors (Jugert, Noack, &

Rutland, 2011; Tropp, O'Brien, & Migacheva, in press) that could lead to cross-group interactions and friendships among youth in school settings. Objective, structural factors can be assessed as characteristics of an organizational unit, like a classroom or school. For example, one might make predictions about the effects of proportions of ethnic minority students in a classroom based on data compiled by the school or state.

Studies testing effects of structural factors such as proportions of groups in a classroom have shown both negative effects (e.g., Durkin et al., 2011) and positive effects (Hallinan & Khmelkov, 1999). Using cross-sectional data, Vervoort and colleagues (2011) found that ethnic majority and minority adolescents in classrooms with higher proportions of ethnic minority students generally had more negative attitudes toward the other group, yet having greater proportions of cross-group friendships and higher quality cross-group friendships predicted less negative attitudes toward the other group. In longitudinal research, Hallinan (1982) found that White students picked more White friends relative to Black friends at the beginning of the year when they were in majority Black classrooms; however, over the course of the year they chose significantly more Black classmates as friends than they had chosen at the beginning of the year. These findings suggest that higher proportions of outgroup members in a classroom may initially provoke ingroup bias; but over significant periods of time, ingroup biases and preferences should decrease, such that students should begin to show greater preferences for and interest in cross-group friendships. Controlling for ethnic proportions, Jugert and his colleagues (2011) similarly found that (majority) German and (minority) Turkish preadolescents showed lower preferences for same-ethnic friends in their classroom between the beginning and end of the year. Further, as German children perceived

greater presence of optimal contact conditions in the classroom, including the perception that teachers support cross-ethnic friendship and that school staff treat all ethnic groups fairly, they showed lower preferences for same-ethnicity friendship. The studies outlined above point to the importance of studying both structural and subjective factors that may promote or inhibit cross-ethnic friendship.

Testing subjective factors in conjunction with structural factors may shed additional light on how proportions of ethnic groups affect intergroup relations in a classroom. The norms students perceive from their teachers and school staff is subjective, and should vary across students within a classroom or a school. Generally, subjective perceptions of institutional norms that support positive intergroup relations tend to engender more positive attitudes and affect toward outgroups (Allport, 1954; Nesdale & Lawson, 2011). In school settings, students' perceptions of normative support for more positive intergroup relations from teachers and school staff have been effective in predicting cross-ethnic friendship and integrated seating patterns (Green et al., 1988). As such, it is possible that regardless of the degree to which someone has regular contact with outgroup members, perceiving that cross-group friendships are supported in one's social environment may further improve intergroup attitudes (Turner et al., 2008; Wright et al., 1997).

### **Promoting Fairness**

Still, research has yet to consider how distinct sets of perceived institutional norms may independently predict distinct intergroup outcomes. Prior work by Green and colleagues (1988) and Jugert and colleagues (2011) has only generally considered how perceived school norms predict relations between groups. In both cases, these

researchers used broad measures to assess perceived school norms, including items assessing perceived support for cross-ethnic friendships and perceived fairness in treatment of all ethnic groups, among other factors. Given that members of different ethnic groups often have different perceptions of inclusion and fairness in diverse social environments (Killen, Henning, Kelly, Crystal, & Ruck, 2007; Killen, Mulvey, & Hitti, 2013), the perception that teachers and school administrators treat students of all ethnic groups fairly may affect intergroup outcomes separately from the perception of norms that support the development of cross-group friendships. In particular, ethnic minority children and adolescents may be more likely than ethnic majority children to identify race or ethnic-based exclusion as morally wrong (Killen et al., 2007).

The current research will therefore test whether perceived school norms supporting cross-ethnic friendship and school norms promoting fairness each independently predict more positive intergroup attitudes and greater interest in cross-ethnic friendship.

### **Divergent Group Perspectives**

Such issues highlight the importance of considering the potentially different effects of contact on members of majority and minority groups. Positive effects of contact are generally weaker for members of minority groups in contrast to members of majority groups (Tropp & Pettigrew, 2005), and such trends have been observed among ethnic minority and majority youth in school settings (e.g., Jugert et al., 2011). Members of minority groups often enter contact with different expectations and experience contact differently than members of majority groups (Dovidio et al., 2012; Tropp & Pettigrew, 2005).

Additionally, findings from studies that have tested the effect of ethnic proportions on intergroup attitudes among minorities in classroom settings are inconsistent. Whereas one study showed that African American students in classes with lower proportions of African American students (and higher proportions of White students) choose more White friends (Hallinan & Teixeira, 1987), another study found that African American students in classes with lower proportions of African Americans reported a lower number of White classmates as friends in proportion to the number of their White classmates (Wilson & Rodkin, 2011). Thus, the present research will explore whether the effects of classroom ethnic proportions and perceived norms differ in predicting positive intergroup attitudes and friendship preferences among ethnic minority and ethnic majority students.

### **The Current Research**

Growing from varied lines of research concerning the effects of perceived norms in school contexts (Green et al., 1988; Jugert et al., 2011) and classroom ethnic composition (e.g., Hallinan, 1982; Wilson & Rodkin, 2011; Durkin et al., 2011), the present research integrates structural and subjective factors in predicting children's intergroup attitudes and interest in cross-ethnic friendships. I will test the effects of ethnic proportions of Latino and White students in the classroom and perceptions of school norms supporting cross-ethnic friendship and fairness on students' attitudes toward interactions with other ethnic groups in cross-sectional analyses with data collected at the beginning of the school year. Past studies have focused either on structural factors (e.g., Hallinan, 1982) or on subjective factors while controlling for the potential positive effect of structural factors (e.g., Jugert et al., 2011). I plan to build on

this work by testing how both structural and subjective factors – including two sets of perceived school norms – independently and jointly predict students’ intergroup attitudes. Specifically, I will examine in cross-sectional analyses how proportions of White and Latino students in a classroom and perceived school norms supporting cross-ethnic friendship and fairness predict White and Latino students’ comfort interacting with outgroup members, as well as their interest in cross-ethnic friendship.

### **Hypotheses:**

- 1) I predict main effects for each set of school norms for both White and Latino students, such that perceiving higher levels of school norms supporting cross-ethnic friendship and fairness should each independently predict higher levels of outgroup comfort and interest in cross-ethnic friendship.
- 2) For both outcomes, I predict cross-level interactions between the proportions of outgroup members in the classroom and perceived school norms supporting cross-ethnic friendship and fairness. For students in classrooms with higher proportions of outgroup members, normative perceptions will be especially predictive of higher levels of outgroup comfort and interest in cross-ethnic friendship.

The research will also explore whether the patterns of results are similar or different for White and Latino participants, given prior research suggesting different responses to contact among members of ethnic majority and ethnic minority groups.

## CHAPTER 2

### METHODS

#### **Participants and Procedure**

Participants were recruited from 44 classrooms in two public middle schools in Western Massachusetts<sup>2</sup>. Data from the Massachusetts Department of Education website indicate that in 2011-2012 -- the year during which data were collected -- the greatest proportions of students at each school were White (69% and 56.1%, respectively) and Hispanic/Latino (23.5% and 36% respectively). Smaller proportions of African American students (2.7% and 4.2%) and students from other racial and ethnic backgrounds (7.3% and 7.9%) attended each school.

Members of the research team visited classrooms in the Fall of 2011 to collect data. Excluding students for whom the research team was not able to obtain parental or personal consent, a total of 287 students identifying as White, -- including 134 6th graders and 153 7<sup>th</sup> graders -- completed surveys. Participants were classified as White if they marked “White” as their racial background or wrote in an ethnic background indicating European origins, such as “French Canadian”. Ages of White participants ranged between 9 and 13. Twelve of these participants were deleted for missing data on

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<sup>2</sup> Additional data were collected from a third middle school in Western Massachusetts, but data from students in these classrooms were excluded from the present analysis because the composition of students’ classrooms changed throughout the school day.

one of the key variables. Thus, the total number of White participants included in analyses was 275.

Excluding students for whom the research team was not able to obtain parental or personal consent, a total of 118 participants identifying as Latino – including 63 sixth graders and 55 7<sup>th</sup> graders -- completed surveys. Participants were classified as Latino if they marked “Latino” as their racial background or wrote in “Spanish”, and/or a location such as Puerto Rico or Mexico that indicated “Latino” or that reflected a Latino heritage (56 boys and 62 girls, 10-14 years old). Seven of these participants were deleted for missing data on one of the key variables. Thus, the final analyses included a total of 111 Latino participants. White participants were included in all 44 classrooms, but Latino participants were only included in 39 of the classrooms.

Upon arriving at each classroom, members of the research team explained that the survey was about “why kids become friends with other kids.” Members of the research team also explained how to answer questions using the scales provided, that there were no right or wrong answers to the survey, and that none of the students’ personal responses would be shared beyond the research team.

### **Analytic Approach**

Hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) was used to test whether differing levels of ethnic proportions across the 44 classrooms interacted with each set of perceived school norms to predict the outcomes for each group. For White participants, the proportion of outgroup students was operationalized as the proportion of Latino students in the classroom, referred to as ‘Proportion Latino’ for the remainder of



this document. For Latino participants, the proportion of outgroup students was operationalized as the proportion of White/non-Latino students in the classroom, referred to as ‘Proportion White’ for the remainder of this document. All variables have been measured and analyzed on one of two levels. Variables measured through participants’ responses to surveys are classified as Level 1 variables. These Level 1 variables include perceived school norms supporting cross-ethnic friendship and perceived school norms of fairness, control variables described below, and both outcome variables (comfort and interest in intergroup contact). All students are nested within classrooms, meaning that they share a value for classroom ethnic proportions with members of their homeroom class. Thus, Proportion White and Proportion Latino are measured and analyzed as Level 2 variables. I performed analyses with the variables mentioned above, as well as controlling for pre-existing cross ethnic friendships and social competence (Harter, 1982), so that results are independent from prior contact experiences that could affect expectations for intergroup contact (Gómez, Tropp, & Fernandez, 2011), and from students’ general attitudes about their social relations (Harter, 1982). To answer the question of whether estimates of each set of perceived norms varied across classrooms according to the proportion of outgroup students, Proportion Latino (for White participants) or Proportion White (for ingroup students) was added to the slope of each set of perceived norms as a cross-level interaction (Raudenbush & Bryk, 2002), as well as the intercept predicting the average level of the outcome for each group. HLM was also useful in controlling for the extent to which the slopes of predictors varied across classrooms in addition to their variability between individuals and in addition to the extent to which Proportion White/Latino explained variance in the estimates across

classrooms (Raudenbush & Bryk, 2002).

### **Measures: Level-1 Predictor and Control Variables.**

Participants completed several multi-item measures to represent the primary constructs of interest. Responses were recorded on a 5-point scale, ranging from 1 (Not at All) to 5 (Very Much). The only exceptions to this method included the scale used to assess participants' pre-existing cross-ethnic friendships, which ranged from 1 (None at All) to 5 (Very Many), and the response set for ethnic group membership.

*Perceived school norms.* Principal component analyses with varimax rotation revealed one item originally intended to measure school norms supporting cross-ethnic friendship --- *This is a school in which everybody is encouraged to become friends* – did not load highly with other items and was thus excluded from analyses.

Principal components analyses showed that items assessing *perceived school norms for fairness* loaded separately from items assessing *perceived school norms supporting cross-ethnic friendship* at Time 1. Among White participants, loadings for items assessing *perceived school norms supporting cross-ethnic friendship* ranged from .85 to .91 and loadings for items assessing *perceived school norms for fairness* ranged from .80 to .90. Among Latino students, loadings for items assessing *perceived school norms supporting cross-ethnic friendship* ranged from .79 to .91 and loadings for items assessing *perceived school norms for fairness* ranged from .70 to .93.

The following three items taken from Green, Adams, & Turner (1988) were used to assess *perceived school norms supporting cross-ethnic friendship (PSNS)*: *My principal and teachers encourage me to make friends with kids of different races, My*

*teachers would be happy if I made friends with kids from other races, and My teachers and principal like it when I “hang out” with kids of different races.* The three items formed reliable scales for White and Latino participants,  $\alpha = .87$  and  $\alpha = .85$  respectively.

An additional three items were adapted from Green, Adams, & Turner (1988) and measured at Time 1 to assess *perceived school norms for fairness (PSNF): The principals and teachers in this school treat kids of all races fairly, In this school, students of different races are treated equally, and The principals and teachers in this school treat all kids the same way, regardless of their race.* These three items formed reliable scales for White and Latino participants,  $\alpha = .83$  and  $\alpha = .85$ , respectively.

Tests of normality indicated that PSNS, PSNF, and Social Competence were all negatively skewed for both groups. PSNF and Social Competence showed high kurtosis for both groups. Transforming PSNS by squaring all values decreased the skew but increased kurtosis for White and Latino participants. Cubing all values increased kurtosis further. Since 209 out of 286 White participants and 76 out of 117<sup>3</sup> Latino participants marked 5 (the maximum value) on PSNF, a dichotomized version of the variable was created. All participants who had a value on PSNF less than 5 were given a value of 0 on the dichotomized version of PSNF. All participants who marked 5 were given a value of 1. Transforming Social Competence by squaring all values decreased skew and kurtosis for White and Latino participants. Thus, all analyses with social competence used the transformed (squared) version of social competence.

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<sup>3</sup> Tests of normality were run using all participants with data on the variable of interest.

Participants were asked to mark one or more of the following to indicate the group that best described their racial background<sup>4</sup>: *White, Latino, Black, Asian, or Other*. Participants who marked *Other* were asked to provide more detail about their background. Students who marked only “White” or who indicated only “Other” or “White” and “Other” and wrote in only a group membership reflecting European heritage were categorized as White. Students who marked Latino or who wrote “Spanish” or a Spanish-speaking country or region other than Spain, such as “Mexico” or “Puerto Rico” were categorized as Latino. The original data file included both groups. This file was used to create variables and for t-tests of group differences on all variables (see Table 1). The file was split for the primary analyses.

*Pre-existing cross-ethnic friendship.* For White and Latino participants, pre-existing cross-ethnic friendship was computed as the sum of three items. Following the direction “Please think about the kids who are in your circle of friends right now”, participants were asked, *How many of your friends are White? How many of your friends are Latino? How many of your friends are Black? How many of your friends are Asian?* For White participants, *pre-existing cross-ethnic friendship* was assessed as the sum of participants’ reported Latino, Black, and Asian friends. For Latino participants, the variable was assessed as the sum of participants’ reported White, Black, and Asian friends.

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<sup>4</sup> The terms “race” and “racial” were used in survey items instead of “ethnic”, because pilot testing revealed that these terms were more easily understood by adolescents.

*Social competence.* Participants were asked to indicate how much they agreed with the following four items, adapted from prior measures of social competence (Harter, 1982) and loneliness (Asher, Hymel, & Renshaw, 1984), *I have lots of friends, I get along well with other kids, I am good at working with other kids, and it is easy for me to make friends.* Responses to the items formed a reliable scale for White students ( $\alpha = .83$ ) and Latino students ( $\alpha = .75$ ).

### **Measures: Level 2 Predictor Variable**

Data on the ethnic background of each student in the classroom was given to the research team by the Superintendent's Office for the district in which the two schools were located. The ethnic categories represented in these district-level data included White, White Hispanic or Latino, Black or African American Hispanic or Latino, Black or African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and combinations of these groups. Numbers of students categorized as "White Hispanic or Latino" and "Black or African American Hispanic or Latino" were used to calculate the proportion of Latino students in each classroom, while numbers of students categorized as "White" and not "White Hispanic or Latino" were used to calculate the number of White students in the classroom. The classroom proportion of White students (Proportion White) was calculated by dividing the number of White, non-Hispanic students by the total number of students in the classroom. The classroom proportion of Latino students (Proportion Latino) was calculated by dividing the number of students classified as White Hispanic or Latino and Black or African American Hispanic or Latino in the class by the total number of students in the class.

## **Measures: Outcome Variables**

*Outgroup Comfort* was assessed using items from prior research (Migacheva & Tropp, 2013; Tropp, O'Brien, & Migacheva, in press), in which students were asked to respond to four questions that followed these instructions: *In general, when you interact with KIDS FROM OTHER RACIAL GROUPS.... how much do you like being around them, how much do you feel like they want to be friends with you, how nice are they to you, and how comfortable do you feel, like you can relax around them?* These items formed reliable scales for both White and Latino participants,  $\alpha = .86$  and  $\alpha = .80$ , respectively.

*Interest in cross-ethnic friendship.* As in prior research (Migacheva & Tropp, 2013), students were asked to respond to questions concerning their interest in cross-ethnic friendship, worded as follows: *“In general, how much would you like to become friends with kids who are...”* For White participants, interest in cross-ethnic friendship was measured as students' response to this question ending with “Latino”. For Latino participants, interest in cross-ethnic friendship was measured as students' response to this question ending with “White”.

## CHAPTER 3

### RESULTS

In order to examine the effects of the proportion of outgroup students separately for both Latino and White participants, all analyses were conducted once with White participants, and once with Latino participants. All predictors were grand mean centered, so that each coefficient would reflect the relationship between the predictor and the outcome with all other predictors at the average level for all participants in the dataset.

Model 1 tests relationships between the control variables of social competence (squared) and pre-existing cross-ethnic friendship and the outcome variables of outgroup comfort and interest in cross-ethnic friendship. The extent to which the slope of all predictors varies across classrooms --- Level 2 Variability – is controlled for in Model 1.

Control variables that are not significant or that do not approach marginal significance ( $p \leq .1$ ) in Model 2 are deleted in the final version of Model 2. Variance components, which control for the extent to which the slopes of predictors vary across classrooms (Level 2), are not controlled for in Model 2 unless  $p \leq .250$ . The only exception is for the variance components at the intercept and the slopes of PSNS and PSNF, when Proportion White or Proportion Latino was added to the slope of the estimate in Model 3. In Model 3, Proportion Latino or Proportion White was added to the slope of the intercept and the slopes of PSNS and PSNF (Model 3) for analyses with White and Latino participants, respectively. The final version of Model 3 was also trimmed of non-significant predictors and variance components. Given the high kurtosis of PSNF, results are presented in the text of the results section for Models 2 and 3 using

the continuous and dichotomous versions of PSNF.

### Preliminary Analyses

Table 1 shows descriptive statistics for all Level 1 variables separately for White and Latino participants. All means -- except for pre-existing cross-ethnic friendship -- are above the midpoint on the scale. The highest means are for PSNF, which are above 4.50 for both groups, on a 5-point scale. Although both groups perceive high levels of PSNF, Latino participants perceive marginally lower PSNF than White participants. Latino participants report significantly greater numbers of pre-existing cross-ethnic friendships, as well as higher levels of social competence and outgroup comfort, relative to White participants.

Table 2 shows correlations between predictor and outcome variables, with values for Latino participants below the diagonal and values for White participants above the diagonal. Proportion Latino and Proportion White are correlated above -.85 for both groups, indicating that in general, a greater proportion of White students in the classroom corresponds with a smaller proportion of Latino students in the classroom, and vice versa. Proportion White correlates positively with PSNF for both groups, and Proportion Latino is negatively correlated with PSNF for both groups.

Analyses for each outcome variable are presented in six models. The first three models for each outcome are presented in one table with White participants as the reference group. The second three models are presented in a separate table with Latino participants as the reference group. Analyses were conducted separately for White and Latino participants so that Proportion Latino could be added to Model 3 to reflect the



proportion of outgroup students when White students are the participants, and Proportion White could be added to Model 3 to reflect the proportion of outgroup students when Latino students are the participants.

### Predicting Outgroup Comfort for White participants

Model 1 in Table 3 was constructed to test the control variables of social competence and pre-existing cross-ethnic friendship as predictors of outgroup comfort with White participants as the participants. The average level of Time 1 outgroup comfort for White participants was 3.76,  $SE = .07$ ,  $p < .001$ , controlling for the slope of pre-existing cross-ethnic friendship and social competence. Higher levels of pre-existing cross-ethnic friendship and social competence both predicted higher levels of outgroup comfort while controlling for all other variables in the model (see Table 3).

Model 2 in Table 3 was constructed to test Hypothesis 1 with White participants, that PSNS and PSNF would each independently predict higher levels of outgroup comfort while controlling for social competence and pre-existing cross-ethnic friendship. Initial analyses revealed that it was unnecessary to control for Level 2 variance in the slope of pre-existing cross-ethnic friendship. Thus, analyses were run without controlling for Level 2 variance in this predictor. With PSNS and PSNF added in Model 2, the average level of outgroup comfort among White participants was 3.74,  $SE = .06$ ,  $p < .001$ . The control variables of pre-existing cross-ethnic friendship and social competence each continued to predict higher levels of Time 1 outgroup comfort. PSNS and PSNF also each significantly predicted higher levels of outgroup comfort,  $\gamma = .18$ ,  $SE = .05$ ,  $p = .001$ , and  $\gamma = .30$ ,  $SE = .08$ ,  $p = .001$ , respectively. Adding PSNS and PSNF significantly

improved model fit,  $\chi^2(6) = 46.93, p < .001$  compared to Model 1.<sup>5</sup>

Model 3 in Table 3 was constructed to test Hypothesis 2 with White participants, that higher proportions of outgroup (Latino) students in the classroom would increase the slopes of PSNS and PSNF while controlling for ethnic group, social competence, and pre-existing cross-ethnic friendship. Proportion Latino was added as a Level 2 predictor to the intercept predicting the average level of outgroup comfort for White participants, to the slope of PSNS, and to the slope of PSNF. Level 2 variability was controlled for on all variables except for pre-existing cross-ethnic friendship. Proportion Latino did not account for variance that approached marginal significance on the slopes of either PSNS or PSNF ( $p < .600$ ). PSNS and PSNF each continued to positively predict outgroup comfort,  $\gamma = .17, SE = .05, p = .002$ , and  $\gamma = .33, SE = .08, p < .001$ , respectively. Model 3 did not significantly improve upon the fit of Model 2,  $\chi^2(3) = 1.94, p > .500$ , but it did significantly improve upon Model 1,  $\chi^2(9) = 48.87, p < .001$ .

#### Reconstructing Analyses with Dichotomized Version of PSNF

Model 2 was reconstructed with the dichotomized version of PSNF. The results with the dichotomized version were roughly the same as Model 2 with the continuous version of PSNF. The extent to which the relationship between pre-existing cross-ethnic friendship and outgroup comfort varied across classrooms was not controlled for, because the p-value of that variance was  $> .250$ . PSNF remained significant as a dichotomized

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<sup>5</sup> A significant improvement in model fit was found both when controlling for Level 2 variance in the slope of pre-existing cross-ethnic friendship and when not controlling for it.

predictor,  $\gamma = .25$ ,  $SE = .11$ ,  $p = .021$ . This also provided a significant improvement in model fit compared to Model 1,  $\chi^2(6) = 36.92$ ,  $p < .001$ .

Model 3 was also reconstructed with the dichotomous version of PSNF. The results were similar to the results from Model 3 with PSNF as a continuous variable. Proportion Latino did not significantly affect the intercept predicting the average level of outgroup comfort, nor did it moderate the relationship between PSNS and outgroup comfort, nor the relationship between PSNF and outgroup comfort. Model 3 using the dichotomized version of PSNF was not a significant improvement in model fit compared to Model 2,  $\chi^2(3) = .85$ ,  $p > .500$ , but it did significantly improve upon Model 1,  $\chi^2(9) = 37.77$ ,  $p < .001$ .

#### Predicting Outgroup Comfort for Latino Participants

Model 1 in Table 4 was constructed to test the control variables of social competence and pre-existing cross-ethnic friendship predicting outgroup comfort with Latino participants. The average level of outgroup comfort for Latino participants, controlling for social competence and pre-existing cross-ethnic friendship, was 4.13,  $SE = .08$ ,  $p < .001$ . Pre-existing cross-ethnic friendship did not emerge as a significant predictor of outgroup comfort, but social competence positively and significantly predicted outgroup comfort.

Model 2 in Table 4 was constructed to test Hypothesis 1 with Latino participants, that higher levels of PSNS and PSNF would each independently predict higher levels of outgroup comfort while controlling for social competence and pre-existing cross-ethnic friendship. Pre-existing cross-ethnic friendship did not significantly or marginally predict

outgroup comfort ( $p = .925$ ), so it was deleted from Model 2. Controlling for social competence, neither PSNS nor PSNF emerged as significant predictors,  $\gamma = .10$ ,  $SE = .07$ ,  $p = .175$ ,  $\gamma = .15$ ,  $SE = .09$ ,  $p = .112$ . Social competence also significantly predicted outgroup comfort. The addition of these two variables did not provide a significant improvement in model fit over Model 1,  $\chi^2 (5) = 9.03$ ,  $p = .107$ .

Model 3 in Table 4 was constructed to test Hypothesis 2 with Latino participants, that higher proportions of outgroup students (Proportion White) in the classroom would increase the slopes of PSNS and PSNF, while controlling for social competence and pre-existing cross-ethnic friendship. PSNS emerged as a marginally significant predictor of outgroup comfort while controlling for all variables in the model,  $\gamma = .14$ ,  $SE .08$ ,  $p = .091$ . PSNF still did not predict outgroup comfort, and the Proportion of White students did not affect the slope of either PSNS, PSNF, nor the intercept predicting the average level of outgroup comfort for Latino participants. This did not provide for a significant improvement in model fit,  $\chi^2 (8) = 10.48$ ,  $p = .232$  over Model 1, nor did it significantly improve upon Model 2,  $\chi^2 (3) = 1.45$ ,  $p > .500$

#### Reconstructing Analyses with Dichotomized Version of PSNF

Model 2 was rerun with a dichotomized version of PSNF. The results of this version of the model were roughly the same, except that PSNS emerged as a marginal predictor of comfort,  $\gamma = .14$   $SE = .08$ ,  $p = .073$ , and the p value of the variance in the relationship between social competence and outgroup comfort was above .25, and so it was not controlled for. Model 2 with the dichotomized version of PSNS did not significantly improve upon model fit, compared to Model 1,  $\chi^2 (1) = .60$ ,  $p > .500$

Model 3 was rerun with a dichotomized version of PSNF. As in Model 2, since the p-value in the variance of the relationship between social competence and outgroup comfort across classrooms was above .25, this variance was again not controlled for. The results for this version of Model 3 were roughly the same, except that PSNS did not emerge as a marginal predictor of outgroup comfort,  $\gamma = .14$ ,  $SE = .09$ ,  $p = .109$ . This did not add a significant improvement in model fit compared to Model 1,  $\chi^2(4) = .68$ ,  $p > .500$ , or to Model 2,  $\chi^2(3) = .08$ ,  $p > .500$ .

#### Predicting Interest in Cross-Ethnic Friendship for White Participants

Model 1 in Table 5 was constructed to test the control variables of pre-existing cross-ethnic friendship and social competence as predictors of interest in cross-ethnic friendship with White participants. Table 5 shows that the average level of interest in cross-ethnic friendship among White participants was 3.72,  $SE = .07$ ,  $p < .001$ , controlling for the slope of pre-existing cross-ethnic friendship and social competence. Pre-existing cross-ethnic friendship significantly predicted higher levels of interest in cross-ethnic friendship, and social competence predicted marginally higher levels of interest in cross-ethnic friendship among White participants ( $p = .073$ ; see Table 5).

PSNS and PSNF were entered into Model 2 to test Hypothesis 1 with White participants, that each would independently predict higher levels of interest in cross-ethnic friendship while controlling for social competence and pre-existing cross-ethnic friendship. In the final version of Model 2, social competence was deleted because it did not predict interest in cross-ethnic friendship while controlling for all other variables in the model. After deleting social competence from the model, variability between classrooms was controlled for in the slopes of all predictors except pre-existing cross-

ethnic friendship, because the  $p$  value of the variance in the slope of pre-existing cross-ethnic friendship across classrooms was  $> .500$ . Higher levels of PSNS significantly predicted higher levels of interest in cross-ethnic friendship,  $\gamma = .29$ ,  $SE = .08$ ,  $p = .001$ , while controlling for PSNF and pre-existing cross-ethnic friendship. PSNF did not significantly predict interest in cross-ethnic friendship,  $\gamma = .10$ ,  $SE = .14$ ,  $p = .506$ . Higher levels of pre-existing cross-ethnic friendship significantly predicted higher levels of interest in cross-ethnic friendship. The final version of Model 2 provided a significant improvement in model fit compared to Model 1,  $\chi^2(1) = 22.46$ ,  $p < .001$ .<sup>6</sup>

For Model 3 in Table 5, Proportion Latino was added to the slopes of the intercept, PSNS, and PSNF to test Hypothesis 2 with White participants, that higher proportions of outgroup students in the classroom (Proportion Latino) would increase the slopes of PSNS and PSNF. With all estimates from Model 2 using the continuous version of PSNF, Proportion Latino did not significantly affect the slopes of either PSNS or PSNF,  $\gamma = .08$ ,  $SE = .54$ ,  $p = .880$ , and  $\gamma = -.43$ ,  $SE = .74$ ,  $p = .562$ , respectively. However, the estimate of Proportion Latino on the intercept predicting the average level of interest in cross-ethnic friendship for White participants indicated that on average, White participants in classrooms with greater proportions of Latino students reported

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<sup>6</sup> The version of Model 2 controlling for all predictors from Model 1 also significantly improved upon the fit of Model 1, demonstrating that the addition of PSNS and PSNF significantly improved the fit of the model, with or without the social competence and while controlling or not controlling for the variance across classrooms in the relationship between pre-existing cross-ethnic friendship and interest in cross-ethnic friendship.

marginally lower levels of interest in cross-ethnic friendship,  $\gamma = -1.02$ ,  $SE = .51$ ,  $p = .055$ , controlling for all other predictors in the model. The addition of these Level 2 predictors did not significantly improve upon the fit of Model 2,  $\chi^2(3) = 4.16$ ,  $p = .244$ , but it did significantly improve upon the fit of Model 1,  $\chi^2(4) = 26.62$ ,  $p < .001$ .

### Reconstructing Analyses with Dichotomized Version of PSNF

Model 2 was reconstructed with a dichotomized version of PSNF. The results of this model were similar to the results of Model 2 with the continuous version of PSNF. Social competence was deleted from the model because it did not explain variance in the outcome that approached marginal significance. Variance across classrooms in the relationship between prior cross-ethnic friendship and interest in cross-ethnic friendship was not controlled for since the p-value of that variance was  $> .250$ . PSNS significantly predicted higher levels of interest in cross-ethnic friendship, while controlling for pre-existing cross-ethnic friendship, PSNF, and the variance in the relationship between all predictors except pre-existing cross-ethnic friendship and interest in cross-ethnic friendship across classrooms,  $\gamma = .30$ ,  $SE = .08$ ,  $p < .001$ . PSNF did not significantly predict interest in cross-ethnic friendship with these variables in the model. Pre-existing cross-ethnic friendships continued to significantly predict interest in cross-ethnic friendship while controlling for all other variables in the model. Model 2 with the dichotomized version of PSNF provided a significant improvement in model fit compared to Model 1,  $\chi^2(1) = 22.47$ ,  $p < .001$ .

Model 3 was also reconstructed using the dichotomized version of PSNF. The results were similar to the estimates of Model 3 with the continuous version of PSNF. Higher proportions of Latino students marginally decreased the intercept predicting the

average level of interest in cross-ethnic friendship for White participants, controlling for all other variables in the model,  $\gamma = -1.02$ ,  $SE = .52$ ,  $p = .055$ . Proportion Latino did not interact with PSNS or the dichotomized version of PSNF in predicting interest. This version of Model 3 did not significantly improve upon the version of Model 2 with the dichotomized version of PSNF,  $\chi^2(3) = 3.88$ ,  $p = .273$ , but it did significantly improve upon the fit of Model 1  $\chi^2(4) = 26.36$ ,  $p < .001$ .

### Predicting Interest in Cross-Ethnic Friendship for Latino Participants

Model 1 in Table 6 was constructed to test the control variables of social competence and pre-existing cross-ethnic friendship predicting interest in cross-ethnic friendship with Latino participants. The average level of interest in cross-ethnic friendship among Latinos was 3.85,  $SE = .10$ ,  $p < .001$ , while controlling for pre-existing cross-ethnic friendship and social competence. Social competence and pre-existing cross-ethnic friendship each significantly predicted higher levels of interest in cross-ethnic friendship (see Table 6).

In Model 2 of Table 6, PSNS and PSNF were added to test Hypothesis 1 with Latino participants, that higher levels of PSNS and PSNF would each independently predict higher levels of interest in cross-ethnic friendship while controlling for social competence and pre-existing cross-ethnic friendship. The patterns of results for Model 2 are also similar between White and Latino participants. Neither PSNS nor PSNF predicted higher levels of interest in cross-ethnic friendship while controlling for all other variables in the model,  $\gamma = .14$ ,  $SE = .11$ ,  $p = .219$  and  $\gamma = .22$ ,  $SE = .13$ ,  $p = .112$ , respectively. Higher levels of pre-existing cross-ethnic friendship also predicted higher levels of interest in cross-ethnic friendship and social competence marginally predicted



interest in cross-ethnic friendship while controlling for all other variables in the model ( $p = .055$ ). However, Model 2 did not significantly improve upon the model fit compared to Model 1,  $\chi^2(11) = 10.84, p > .500$ .

To test Hypothesis 2 for Latino participants, that greater proportions of White students in the classroom would increase the slope of PSNS and PSNF for Latino students, Proportion White was added to the slopes of the intercept predicting the average level of interest in cross-ethnic friendship for Latino participants, the slope of PSNS, and the slope of (the continuous version of) PSNF, controlling for pre-existing cross-ethnic friendship and social competence. Since the effect of Proportion White on the slope of PSNS did not approach marginal significance, Proportion White was deleted from this slope. Since the  $p$  value of the variance across classrooms in the relationship between PSNS and interest in cross-ethnic friendship was  $> .250$  after deleting Proportion White, this variance was not controlled for. PSNS again did not significantly predict interest in cross-ethnic friendship. PSNF, however, predicted significantly higher levels of interest in cross-ethnic friendship for Latino participants,  $\gamma = .42, SE = .17, p = .018$ , and higher levels of Proportion White significantly increased the slope of PSNF predicting interest in cross-ethnic friendship,  $\gamma = 2.23, SE = .84, p = .012$ . There was no effect of Proportion White on the slope of the intercept predicting the average level of interest in cross-ethnic friendship for Latino participants. Controlling for all other variables in the model, pre-existing cross-ethnic friendship and social competence continued to significantly and marginally predict higher levels of interest in cross-ethnic friendship, respectively. Model 3 did not provide a significant improvement to the fit of Model 2,  $\chi^2(3) = 3.82, p = .281$ , but it did provide a marginal improvement to the fit of Model 1,  $\chi^2(8) = 14.65, p = .066$ .

Figure 1 shows two lines representing the relationship between PSNF and interest in cross-ethnic friendship among Latino participants, controlling for all variables in Model 3. The solid red line represents the relationship between PSNF and interest in cross-ethnic friendship for Latino participants in classrooms one standard deviation below the mean in proportions of White students (.47 Proportion White). The dashed green line represents Latino participants in classrooms one standard deviation above the mean in proportions of White students (.73). For both lines, it appears that as PSNF becomes higher, interest in cross-ethnic friendship becomes higher. However, this relationship seems especially strong for Latino participants in classrooms with high proportions of White (outgroup) participants.<sup>7</sup>

#### Reconstructing Analyses with Dichotomized Version of PSNF

Model 2 was rerun with the dichotomized version of PSNF. Social competence was non-significant when controlling for all other variables in this model. Thus, social competence was deleted and the model was rerun with PSNS, the dichotomized version of PSNF, and pre-existing cross-ethnic friendship. In this model, PSNS marginally predicted higher levels of interest,  $\gamma = .17$ ,  $SE = .10$ ,  $p = .083$ , and having a value of 5 on PSNF significantly predicted higher levels of interest in cross-ethnic friendship while controlling for all other variables in the model,  $\gamma = .53$ ,  $SE = .21$ ,  $p = .016$ . These predictors did not provide a significant improvement in model fit compared to Model 1,  $\chi^2(5) = 7.29$ ,  $p > .199$ .

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<sup>7</sup> Future analyses (Preacher, Curran, & Bauer, 2006) will test the significance of the simple slopes of this interaction.

Model 3 was restructured using a dichotomous version of PSNF, building onto Model 2 using the dichotomized version of PSNF. As in the version of model 3 with PSNF as a continuous variable, the effect of Proportion White on the slope of PSNS did not approach marginal significance, so it was not included in the final model. Nor was the variance in the relationship between PSNS and the outcome across classrooms controlled for, since the p-value of that variance was  $> .250$ . Social competence was added back into the model since it approached marginal significance in predicting the outcome while controlling for all variables in the model ( $p = .106$ ). PSNS did not predict higher levels of interest in cross-ethnic friendship, but reporting a value of 5 on PSNF significantly predicted higher levels of interest in cross-ethnic friendship,  $\gamma = .59$ ,  $SE = .22$ ,  $p = .01$ , and higher proportions of White students significantly increased the slope of that relationship,  $\gamma = 3.07$ ,  $SE = 1.49$ ,  $p = .047$ . Pre-existing cross-ethnic friendship also significantly predicted interest in cross-ethnic friendship. Model 3, using the dichotomized version of PSNF, did not significantly improve upon the fit of Model 2 using the dichotomized version of PSNF,  $\chi^2(3) = 3.50$ ,  $p = .321$ , but it did significantly improve upon the fit of Model 1,  $\chi^2(8) = 16.47$ ,  $p = .036$ .

## CHAPTER 4

### DISCUSSION

Perceived school norms supporting cross-ethnic friendship (referred to as perceived support from here on) and perceived school norms of fairness (referred to as perceived fairness from here on) both predicted higher levels of outgroup comfort among White, but not Latino participants. Perceived support but not perceived fairness also predicted interest in cross-ethnic friendship for White participants. In contrast, perceived fairness, but not perceived support, predicted interest in cross-ethnic friendship for Latino participants, but this effect depended on the proportion of White students in the classroom, such that a greater proportion of White students made significant and strengthened the relationship between perceived fairness and interest for Latino participants.<sup>8</sup> These findings provide partial support for Hypothesis 1 for the outcomes of outgroup comfort and interest in cross-ethnic friendship among White participants. Among Latino participants, the results provide partial support for Hypothesis 2 for the outcome of interest in cross-ethnic friendship. A particular strength of the current research is that these effects were observed even when controlling for participants' general levels of social competence (Asher et al., 1984; Harter et al., 1982) and pre-existing cross-ethnic friendships, when these variables were also significantly predicting the respective outcome. Taken together, these results strongly suggest that among White participants, perceiving higher levels of normative support from teachers and school staff

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<sup>8</sup> Simple slopes analyses will be required to confirm the nature of the interaction (Preacher, Curran, & Bauer, 2006)

promotes greater comfort interacting with outgroups over and above general social skills (Harter, 1982) and pre-existing intergroup friendships, which generally promote positive intergroup attitudes and affect (Pettigrew, 1998; Pettigrew & Tropp, 2006; Tropp & Pettigrew, 2005). In contrast, among Latino participants, the results suggest that perceiving higher levels of fairness from teachers and school staff promotes interest in cross-ethnic friendship, especially when they share the classroom with high proportions of White students.

It should be noted that the variable of outgroup comfort does not specify a particular outgroup. Although Whites and Latinos are the largest groups at each school, they do not comprise the entire school composition. For White participants, any other group within the school is an ethnic minority group. In contrast, for Latino participants, other groups could include the ethnic majority (Whites) and/or other minority groups. It is unclear based on past research and the current research how Latinos might respond differentially to other ethnic minority groups in contrast to the ethnic majority group, but it is possible that perceiving active support and perceiving fairness is especially relevant to ethnic minority-majority relations.

#### Differentiating Comfort from Interest

Additionally, while the dependent variables are correlated among both Whites and Latinos, it may also be useful to differentiate between them. Interest in cross-ethnic friendship reflects choice and suggests a proactive approach to intergroup relations. In contrast, reports of outgroup comfort may reflect participants' prior experiences. Students, particularly ethnic minority students, are likely placed in situations where they must interact with other groups. Outgroup comfort assesses whether participants are

comfortable in intergroup interactions, not whether they would choose to increase and enhance the depth of such interactions. Ethnic minorities generally have higher levels of contact with ethnic majorities than the reverse (Tropp & Pettigrew, 2005), and Latinos in this dataset similarly show significantly higher levels of pre-existing cross-ethnic friendships than Whites, as well as significantly higher levels of outgroup comfort (see Table 1). Latinos' pre-existing cross-ethnic friendships did not significantly predict their levels of comfort in the models tested. However, if Latinos had higher levels of intergroup contact beyond their pre-existing cross-ethnic friendships, this may explain why perceived norms from the school environment were less important for predicting outgroup comfort for Latinos (for a related discussion, see Cameron, Rutland, Hossain, & Petley, 2011).

#### Predicting Interest among White and Latino Participants

Perceived support but not perceived fairness predicted interest in cross-ethnic friendship for White participants, providing partial support for Hypothesis 1. No evidence indicated that this effect depended upon the proportion of Latino students in the classroom, which would have supported Hypothesis 2. It is possible that White participants' status as the ethnic majority in the school and as the advantaged group in society may have rendered their numerical status in the classroom and perceived fairness as less important for their interest in intergroup contact. It is also possible that the restricted range of the proportion of Latino students among White participants limited the potential for the proportion of Latino students to moderate the slope of perceived support or perceived fairness (see section below on 'Statistical considerations').

Among Latino participants, perceived fairness but not perceived support predicted

interest in cross-ethnic friendship; moreover, this effect depended on the proportion of White students in the classroom, providing partial support for Hypothesis 2. This suggests that when Latino students are in classrooms with greater proportions of White students, perceived fairness becomes a significant predictor of their interest in cross-ethnic friendship. These effects are consistent with research showing that cues providing assurance regarding one's social identity can undermine the effects of threat and promote trust and comfort (Davies, Spencer, & Steele, 2005; Purdie-Vaughns et al., 2008). This research suggests that while greater representation of minorities in organizations promotes trust and comfort, organizational messages supporting diversity can still promote trust and comfort even when the representation of minorities is low (Purdie-Vaughns et al., 2008).

Similar to this past research, low proportions of other Latino students in the classroom may provide cue a threatening environment for Latino students, but perceiving fairness as normative may alleviate that threat and promote positive orientations toward intergroup relations. In the current research, these normative perceptions may have been most important for interest in cross-ethnic friendship rather than outgroup comfort because the former outcome represents relations specifically between Latino and White students, rather than between Latino students and other groups generally. It is also possible that ethnic minority students feel comfortable interacting with other groups generally regardless of the fairness they perceive or the proportion of ethnic majority members in the classroom, but perceiving fairness is particularly important for proactively choosing behaviors that promote positive relations between one's own group and the ethnic majority.

### Why Would Classroom Proportions Matter for Latinos but not Whites?

Since the items assessing perceived fairness were worded generally, it is unclear whether lower perceptions of fairness reflects recognition that other groups are treated unfavorably, or beliefs that one's own group is treated unfavorably. It is possible that for some participants -- particularly White participants -- reporting the highest values of fairness reflects a failure to recognize inequalities and unfair treatment (Apfelbaum, Pauker, Sommers, & Ambady, 2010; Sasaki & Vorauer, 2013). In contrast, ethnic minorities may have perceived lower levels of fairness (see Table 1) because they are generally more likely to perceive discrimination from their teachers (Ruck & Wortley, 2002). Future research should disentangle effects of perceiving outgroups as receiving unfair treatment and perceiving one's own group as being treated unfavorably in predicting interest in intergroup contact.

It is also possible that the effect of perceived support on interest depends on perceptions of fairness among ethnic minorities. When teachers and school staff are perceived as unfair in their treatment of different ethnic groups, their support for friendship between different groups may be viewed as illegitimate. Additional analyses with the current data failed to find support for this interaction, but it is possible that this is due to low power for an interaction involving non-normally distributed data. Alternatively, a third variable associated with perceived fairness and the proportion of White students may also account for the interaction between perceived fairness and the proportion of White students in the classroom predicting greater interest in cross-ethnic friendship among Latino students.



### Statistical Considerations

As revealed in preliminary analyses and as the demographics of each school would suggest, on average classrooms had higher proportions of White compared to Latino students. This is an important consideration for interpreting the meaning of “high” and “low” proportions of outgroup students, given that there were different ranges in proportion of outgroup students for Latino and White participants. For Latino participants, the proportion of outgroup (White) students in the classroom ranged from .33 to .90. For White participants, the proportion of outgroup (Latino) students in the classroom ranged from 0 to .59. As such, the average proportion White is above the maximum value of proportion Latino for both groups. Among Latino participants, the range allows for testing how the proportion of outgroup (White) students moderates the slope of perceived norms, comparing when the proportion of outgroup students comprises about half of the class to when the proportion of outgroup students comprises the vast majority. In contrast, among White participants, the range of proportion outgroup (Latino) students allows for testing how the proportion of outgroup students moderates the slope of perceived norms comparing when the proportion of outgroup students comprises none of the class in contrast to slightly more than half of the class. It is possible that if the ranges of Proportion White/Latino were more comparable, similar effects of proportion outgroup on the slope of perceived fairness predicting interest in cross-ethnic friendship would be observed among White participants. In future analyses, quadratic terms will test whether the interaction between proportion White and perceived fairness varies along the range of Proportion White. In addition, future analyses will test

for the significance of simple slopes on the interaction of perceived fairness and Proportion White (Preacher, Curran, & Bauer, 2006).

### Conclusion

In closing, results from this study strongly suggest that among White participants perceived support for cross-ethnic friendship promotes positive intergroup outcomes over and above general social abilities (Asher et al., 1984; Harter, 1982) as well as past intergroup friendships (Pettigrew, 1998). Perceived support predicted higher levels of outgroup comfort and higher levels of interest in cross-ethnic friendship for White participants. Perceived fairness predicted higher levels of comfort, but not interest in cross-ethnic friendship for White participants. As explained above, it is possible that for some White participants, rating less high values on perceived fairness reflects recognition of inequality, rather than feeling that Whites are disfavored. Higher values on perceived fairness could reflect color-blindness (Apfelbaum, 2010; Sasaki & Vorauer, 2013) or a more objective assessment of how fairly teachers and school staff treat students of different ethnic groups. In contrast, less high values could reflect recognition that one's own group is favored -- which among adults could lead to positive intergroup outcomes like collective action to address inequality (Leach, Iyer, & Pedersen, 2006) -- or it could reflect the perception that an outgroup is favored. Future research should use measures specifying the group or groups that participants perceive as receiving unfair treatment.

For Latino participants, perceived fairness but not perceived support predicted interest in cross-ethnic friendship, depending upon the proportion of White students in the classroom. A higher proportion of outgroup (White) students in the classroom strengthened and made significant the relationship between the fairness that Latino

participants perceive and their interest in cross-ethnic friendship with White participants. Perceived fairness did not predict higher levels of outgroup comfort for Latino participants. This may be due to Latino participants' generally higher levels of comfort interacting with outgroups. As explained above, future research should test whether perceived support promotes ethnic minorities' interest and comfort toward ethnic majorities when they perceive high levels of fairness but not when they perceive less high levels of fairness, especially in classrooms with higher proportions of ethnic majority members. Future research testing this interaction should include measures that specify the groups with whom participants feel comfortable or uncomfortable, and the groups that participants perceive as being favored or disfavored. Such research would advance understanding of the relationship between perceived support and perceived fairness in promoting positive intergroup outcomes.

APPENDIX A

TABLES

TABLE 1. GROUP DIFFERENCES IN PREDICTOR AND OUTCOME VARIABLES.

	White	Latino		
	Mean (SD)	Mean (SD)	<i>t</i>	<i>p</i>
PSNS	3.92 (1.10)	4.00 (1.12)	-0.59	0.559
PSNF	4.75 (.60)	4.51 (.88)	2.65**	0.009 <sup>9</sup>
Pre-existing Cross-Ethnic Friendship	6.32 (2.30)	7.40 (2.35)	-4.16***	< .001
Social Competence	4.05 (.86)	4.28 (.69)	-2.70**	0.007 <sup>10</sup>
Outgroup Comfort	3.74 (.97)	4.12 (.80)	-3.67***	< .001
Interest in Cross-ethnic Friendship	3.72 (1.30)	3.83 (1.14)	-0.74	0.458

<sup>9</sup> T-tests for PSNF and social competence use tests that do not assume equal variances between groups.

<sup>10</sup> Please see footnote 5.

TABLE 2. BIVARIATE CORRELATIONS BETWEEN PREDICTOR AND OUTCOME VARIABLES FOR WHITE PARTICIPANTS (ABOVE THE DIAGONAL) AND LATINO PARTICIPANTS (BELOW THE DIAGONAL).

	1.	2.	3.	4.	5.	6.	7.	8.
1. PSNS	--	.385***	.295***	.155**	.140*	-.042	.410***	.315***
2. PSNF	.562***	--	.265***	.083	.162**	-.128*	.386***	.156**
3. SC	.281**	.242**	--	.223***	.115 <sup>+</sup>	-.070	.463***	.169**
4. PCF	.266**	.048	.170 <sup>+</sup>	--	-.028	-.033	.315***	.330***
5. PW	.153	.260**	-.065	-.099	--	-.858***	.044	.068
6. PL	-.082	-.196*	.013	.131	-.886***	--	.012	-.129*
7. OC	.289**	.327***	.307***	.155	.004	-.070	--	.330***
8. Int	.355**	.255**	.287**	.327***	.102	-.071	.352**	--

Note: \*\*\*  $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ , <sup>+</sup>  $\leq .1$ .

SC = Social Competence, PCF = Pre-existing cross-ethnic friendship, PW = Proportion White, PL = Proportion Latino, OC = Outgroup Comfort, Int = Interest in Cross-ethnic Friendship.

TABLE 3. OUTGROUP COMFORT FOR WHITE PARTICIPANTS.<sup>11</sup>

	Model 1 (SE)	Model 2 (SE)	Model 3 (SE)
	$\sigma^2=.558$	$\sigma^2=.456$	$\sigma^2=.455$
Avg. Outgroup Comfort			
for White participants			
Intercept	3.76 (.07) <sup>***</sup>	3.74 (.06) <sup>***</sup>	3.75 (.06) <sup>***</sup>
Proportion Latino			0.41 (.43)
PSNS			
Intercept		.18 (.05) <sup>**</sup>	.17 (.05) <sup>**</sup>
Proportion Latino			-.11 (.34)
PSNF			
Intercept		.30 (.08) <sup>**</sup>	.33 (.08) <sup>***</sup>
Proportion Latino			-.17 (.40)
SC <sup>2</sup>			
Intercept	.07 (.01) <sup>***</sup>	.05 (.01) <sup>***</sup>	.05 (.01) <sup>***</sup>
PCF			
Intercept	.10 (.02) <sup>***</sup>	.09 (.02) <sup>***</sup>	.09 (.02) <sup>***</sup>
	VC	VC	VC

<sup>11</sup> Note: <sup>\*\*\*</sup>  $p \leq .001$ , <sup>\*\*</sup>  $p \leq .01$ , <sup>\*</sup>  $p \leq .05$ , <sup>+</sup>  $p \leq .1$ .

SC<sup>2</sup> = Social Competence squared, PCF = Pre-existing cross-ethnic friendship, VC = Variance Component.

Intercept	.099 <sup>***</sup>	.079 <sup>***</sup>	.071 <sup>***</sup>
PSNS		.026	.025
PSNF		.015	.010 <sup>+</sup>
SC <sup>2</sup>	.001	.001 <sup>*</sup>	.001 <sup>*</sup>
PCF	.001		
		$\chi^2(6) = 46.93^{***}$	$\chi^2(3) = 1.94^{12}$
			$\chi^2(9) = 48.87^{***}$

<sup>12</sup> Model fit statistics for Model 3 are in comparison to Models 2 and 1, respectively.

TABLE 4. OUTGROUP COMFORT FOR LATINO PARTICIPANTS.<sup>13</sup>

	Model 1 (SE)	Model 2 (SE)	Model 3 (SE)
	$\sigma^2=.442$	$\sigma^2=.391$	$\sigma^2=.380$
Avg. Outgroup Comfort			
for Latino Participants			
Intercept	4.13 (.08)***	4.12 (.07)***	4.14 (.08)***
Proportion White			-.19 (.57)
PSNS			
Intercept		.10 (.07)	.14 (.08) <sup>+</sup>
Proportion White			.42 (.61)
PSNF			
Intercept		.15 (.09)	.06 (.13)
			-.87 (.70)
SC <sup>2</sup>			
Intercept	.06 (.02)***	.05 (.02)**	.05 (.02)**
PCF			

<sup>13</sup> Note: \*\*\*  $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ , <sup>+</sup>  $\leq .1$ .

SC<sup>2</sup> = Social Competence squared, PCF = Pre-existing cross-ethnic friendship, VC = Variance Component.



	.02 (.03)		.
	VC	VC	VC
Intercept	.053 <sup>+</sup>	.047	.054 <sup>+</sup>
PSNS		.011	.012 <sup>+</sup>
PSNF		.037	.023
SC	.002	.002	.002
PCF	.001		
		$\chi^2 (5) = 9.03$	$\chi^2 (3) = 1.45^{14}$
			$\chi^2 (8) = 10.48$

---

<sup>14</sup> Model fit statistics for Model 3 are in comparison to Models 2 and 1, respectively.

TABLE 5. INTEREST IN CROSS-ETHNIC FRIENDSHIP FOR WHITE PARTICIPANTS.<sup>15</sup>

	Model 1 (SE)	Model 2 (SE)	Model 3 (SE)
	$\sigma^2=.537$	$\sigma^2=.535$	$\sigma^2=.579$
Avg. Interest in Cross-			
Ethnic Friendship for			
White participants			
Intercept	3.72 (.07) <sup>***</sup>	3.73 (.07) <sup>***</sup>	3.67 (.08) <sup>***</sup>
Proportion Latino			-1.02 (.51) <sup>+</sup>
PSNS			
Intercept		.29 (.08) <sup>***</sup>	.30 (.08) <sup>**</sup>
Proportion Latino			.08 (.54)
PSNF			
Intercept		.10 (.14)	.05 (.14)
Proportion Latino			-.43 (.74)
SC <sup>2</sup>			
Intercept	.02 (.01) <sup>+</sup>		
PCF			
Intercept	.17 (.03) <sup>***</sup>	.16 (.03) <sup>***</sup>	.16 (.03) <sup>***</sup>

<sup>15</sup> Note: \*\*\*  $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ , +  $\leq .1$ .

SC<sup>2</sup> = Social Competence squared, PCF = Pre-existing cross-ethnic friendship, VC = Variance Component.

	VC	VC	VC
Intercept	.000	.007	.005*
PSNS		.054*	.052*
PSNF		.007	.003
SC <sup>2</sup>	.000		
PCF	.000 <sup>+</sup>		
		$\chi^2 (1) = 22.46^{***}$	$\chi^2 (0) = 92.34^{16}$
			$\chi^2 (4) = 26.62^{***}$

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<sup>16</sup> Model fit statistics for Model 3 are in comparison to Models 2 and 1, respectively.

TABLE 6. INTEREST IN CROSS-ETHNIC FRIENDSHIP FOR LATINO PARTICIPANTS.<sup>17</sup>

	Model 1 (SE)	Model 2 (SE)	Model 3 (SE)
	$\sigma^2=.888$	$\sigma^2=.769$	$\sigma^2=.581$
Avg. Interest in Cross-Ethnic Friendship for Latino participants			
Intercept	3.85 (.10) <sup>***</sup>	3.83 (.10) <sup>***</sup>	3.82 (.10) <sup>***</sup>
Proportion White			.77 (.80)
PSNS			
Intercept		.14 (.11)	.10 (.11)
Proportion White			
PSNF			
Intercept		.22 (.13)	.42 (.17) <sup>*</sup>
Proportion White			2.23 (.84) <sup>*</sup>
SC <sup>2</sup>			
Intercept	.05 (.02) <sup>*</sup>	.04 (.02) <sup>+</sup>	.04 (.02) <sup>+</sup>

<sup>17</sup> Note: \*\*\*  $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ , +  $\leq .1$ .

SC<sup>2</sup> = Social Competence squared, PCF = Pre-existing cross-ethnic friendship, VC = Variance Component.

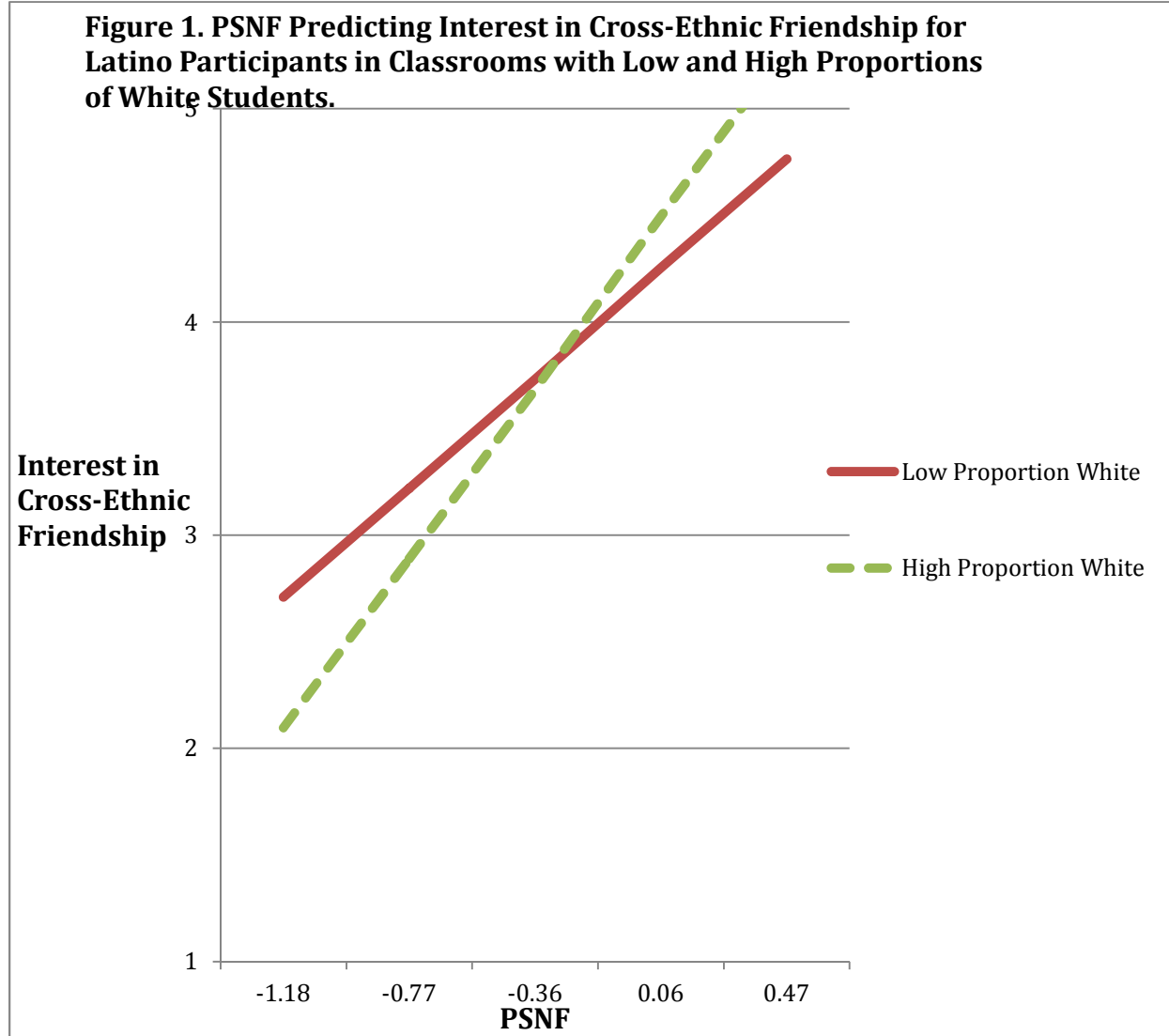
PCF			
Intercept	.14 (.05) <sup>*</sup>	.11 (.05) <sup>*</sup>	.14 (.05) <sup>**</sup>
	VC	VC	VC
Intercept	0.051 <sup>+</sup>	0.043 <sup>**</sup>	.031 <sup>**</sup>
PSNS		0.038	
PSNF		0.049 <sup>*</sup>	.001 <sup>*</sup>
SC <sup>2</sup>	0.002 <sup>*</sup>	0.003 <sup>**</sup>	.002 <sup>**</sup>
PCF	0.025 <sup>***</sup>	0.016 <sup>*</sup>	.024 <sup>***</sup>
		$\chi^2 (11) = 10.84$	$\chi^2 (3) = 3.82^{18}$
			$\chi^2 (8) = 14.65^+$

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<sup>18</sup> Model fit statistics for Model 3 are in comparison to Models 2 and 1, respectively.

APPENDIX B

FIGURE



Note: This figure is based on coefficients with Latino participants, controlling for pre-existing cross-ethnic friendship, social competence squared, PSNS, and the variance between classrooms of all of these estimates predicting the outcome except for PSNS. Predictors are grand mean centered, so that 0 on the x-axis reflects the average level of PSNF. “Low Proportion White” represents the slope of the relationship between PSNF and interest in cross-ethnic friendship for Latino participants in classrooms one standard

deviation below the mean of Proportion White (.47). “High Proportion White” represents the slope of the relationship between PSNF and Time 1 Outgroup Comfort for Latino participants in classrooms one standard deviation above the mean of Proportion White (.73).

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