# Pride and Prejudice:

# Racial Contacts Mediating the Change of In-Group and Out-Group Racial Perceptions

Ji Zhou, Ph.D.

University of Southern California

jizhou@usc.edu

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Abstract

Using the National Longitudinal Survey of Freshmen dataset, this study examined how students' within- and between-group racial contacts mediated the change of in-group and out-group racial perceptions across White, Black, Latino, and Asian students. This study was grounded in intergroup contact theory and employed multi-trait multi-method structural equation modeling (MTMM SEM). Important findings include: 1) students' in-group pride and out-group prejudice decreased during college; 2) Latinos had the most interracial contacts, making Latinos' perceptions of others and others' perceptions of Latinos the least resistant to change; 3) White students had the least interracial contacts, making White students' perceptions of racial minorities and racial minorities' perceptions of Whites the most resistant to change; 4) interracial contact mediated the change of racial perceptions asymmetrically between the two groups involved, depending on group social and academic status; and 5) Black students experienced the change of racial perceptions via racial contacts in significantly different ways than the other three groups. Implications emphasize facilitating and examining interracial contacts not only between White and minority students, but across all four racial groups. Suggestions are also provided for future longitudinal studies to adapt the MTMM SEM design to examine race relations across racial groups.

*Keywords*: interracial contact, racial prejudice, multi-trait multi-method structural equation modeling

# Pride and Prejudice: Racial Contacts Mediating the Change of In-Group and Out-Group Racial Perceptions among American College Students

## Introduction

The number of racial minorities in American higher education more than doubled from 1976 (16%) to 2011 (39%) (National Center for Education Statistics [NCES], 2013). Colleges and universities therefore present a unique environment for students of different racial backgrounds to interact. Considering that K-12 schools along with their neighborhoods have become increasingly segregated by race (Orfield & Lee, 2006), it is the hope that colleges and universities can help bridge the racial divide and counter the effects of segregated K-12 schools and neighborhoods (Chang, Witt, Jones, & Hakuta, 2003; Hurtado, 2006). Research applying intergroup contact theory to American college students has shown that more frequent interracial contact enhances race relations (Antonio, 2001; Bowman, 2012; Bowman & Denson, 2011; Chang, Astin, & Kim, 2004; Chang, Denson, Saenz, & Misa, 2006; Fischer, 2008, 2011; Gurin, Dey, Hutardo, & Gurin, 2002; Hurtado, 2005; Levin, Laar, & Sidanius, 2003).

There are at least two areas that have received less empirical attention. The first limitation in the literature is how interracial contact affects students' in-group reappraisal, i.e., the change of perceptions of their own group members. In-group reappraisal is an important mechanism in interracial contact that serves to decrease provincialization and reduce prejudice (Pettigrew, 1997, 1998; Pettigrew & Tropp, 2006). Yet, the literature emphasizes the change of racial perceptions towards out-group members, with much less attention to the change of in-group perceptions. The second limitation in the literature is how racial contact affects students' racial perceptions across multiple groups, particularly between minorities. Majority-minority (mostly white-black) has been the defining form of interracial contact in studying racial contacts

and race relations among American college students and society at large (Dovidio, Gluszek, John, Ditlmann, & Lagunes, 2010; Inkelas, 2006). With the fast and steady increase of Latino and Asian immigrants in higher education, it is both theoretically and pragmatically important to understand the broader dynamics of interracial contact and racial perception beyond the majority-minority or white-black color line.

As such, I constructed a multi-group, multi-trait multi-method structural equation model (MG MTMM SEM) consisting of 2,943 American college students from the National Longitudinal Survey of Freshmen to examine how students' within-group and between-group racial contacts mediated their change of in-group and out-group racial perceptions. I investigated four research questions: (1) How did white, black, Latino, and Asian students perceive their own race and other races at college entry and college graduation? (2) Did their racial perceptions change during college? (3) How often did students participate in within-group and between-group racial contacts? (4) How did within- and between-group contacts mediate students' change in in-group and out-group racial perceptions? Overall, this study strives to provide a more comprehensive and nuanced understanding of racial contacts and race relations in American higher education.

## Intergroup Contact and Racial Perception

Research on interracial contacts among American college students is situated within a larger body of literature that examines how intergroup contact (i.e., whether they are racial, gender, sexuality, religion, etc.) affects perceptions of out-group members (i.e., members of groups to which one does not belong). Intergroup contact has long been suggested as a remedy to reduce out-group prejudice and improve intergroup relations (Allport, 1954; Pettigrew, 1997, 1998). In a recent meta-analysis, Pettigrew and Tropp (2006) examined studies conducted since

the 1940s in different countries, on different groups (e.g., race, gender, sexuality, etc.), and on different types of contact (e.g., roommates, friends, colleagues, couples, neighbors, etc.). Their meta-analysis concluded that intergroup contact reduces prejudice. Even studies that considered self-selection bias found that the effect of intergroup contact generally outweighed any impact of self-selection.

Two mechanisms inherent to intergroup contact serve to reduce prejudice: learning about the out-group and re-appraising the in-group (Pettigrew, 1998). Assuming prejudice stems from ignorance, learning about the out-group corrects negative views of out-group members and reduces prejudice (Stephan & Stephan, 1989). At the same time, intergroup contact provides an opportunity for in-group reappraisal (Pettigrew, 1998). Individuals may realize that norms and customs accepted in their own group are not the only ways to manage and understand the social world. In-group reappraisal not only reshapes the view of the in-group but also leads to a less provincial and prejudicial view of the out-group (Pettigrew, 1998).

However, intergroup contact does not always serve to reduce prejudice. Initial prejudice and group status are two important factors. First, initial prejudice precipitates the perception of dissimilarity and the willingness to engage in intergroup contact. Less prejudice facilitates more frequent and positive intergroup contact which further reduces prejudice. On the contrary, more prejudice not only reduces intergroup contact but also creates anxiety during contact which can reinforce prejudice (Islam & Hewstone, 1993). Although anxiety is harmful, more previous intergroup contact reduces anxiety during subsequent contact (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Pettigrew & Tropp, 2008). Second, different group statuses lead to asymmetrical benefits between the majority and minority group (Tropp & Pettigrew, 2005). Majority members experience greater decreases in prejudice toward minority members than vice

versa. Minority members are more likely to experience prejudice in intergroup contact, yet at the same time, show greater willingness to address power inequalities as compared to majority members (Saguy, Dovidio, & Pratto, 2008). As a result, minority members may experience greater anxiety which can reinforce prejudice against majority members.

Research over the years has found several conditions for positive intergroup contact. Allport (1954) suggests four essential conditions: individuals from different groups should be of equal status in the situation, they should be engaged in a cooperative (rather than competitive) task, they should share common goals, and they should receive support from authorities. Allport's hypothetical conditions have received considerable research attention and have been proved beneficial in recent meta-analyses (Pettigrew & Troop, 2006, 2008). These meta-analyses do not distinguish between the four conditions, but suggest that they operate as an integral set to facilitate positive effects of intergroup contact. In addition, a fifth condition—friendship potential—is proposed as essential to optimal intergroup contact (Herek & Capitanio, 1996; Pettigrew, 1997). Friendship across group lines not only meets Allport's four facilitating conditions, but also creates empathy through affective ties between groups involved. Research has found a strong negative relationship between having out-group friends and racial prejudice (Antonio, 2001; Pettigrew, 1997; Hereck & Capitanio, 1996).

## Interracial Contact and American College Students' Racial Perception

Studies have found that more frequent interracial contact leads to enhanced racial understanding and reduced racial prejudice among American college students (Antonio, 2001; Bowman, 2012; Bowman & Denson, 2011; Chang, Astin, & Kim, 2004; Chang, Denson, Saenz, & Misa, 2006; Fischer, 2008, 2011; Hurtado, 2005; Levin, Laar, & Sidanius, 2003). These studies are grounded in intergroup theory, particularly the previously-discussed five optimal

conditions. College students are status equals; they usually cooperate with each other on class projects and group activities; they share the same goals such as earning a good grade and obtaining a college degree; colleges and universities usually strive to promote racial harmony; and forming friendships is a common social activity among college students. In other words, interracial contact among college students meets the five facilitating conditions, and therefore creates an optimal contact situation for the reduction of prejudice.

The benefits of interracial contact among college students may not be symmetrical between the two groups involved, however. Interracial contact often helps white students reduce prejudice against blacks to a greater extent than helping black students reduce prejudice against white students (McClelland & Linnander, 2006). This asymmetrical benefit also applies to the contact between white and Latino students (Dixon & Rosenbaum, 2004). Such findings resemble the asymmetrical effect of intergroup contact between majority and minority groups discussed earlier. The overall explanation is that black and Latino students are more likely to experience prejudice when interacting with white students than vice versa. At the same time, blacks and Latinos are usually more willing to address racial inequalities. As a result, these students usually experience greater anxiety which can reinforce prejudice towards white students. As for the contact and perception between white and Asian students, white students tend to have more frequent contact with Asians than with other racial minorities because Asians tend to be less residentially segregated from whites (Bonilla-Silva, 2004). White students also tend to have a more favorable perception of Asians than of blacks and Latinos (Ho & Jackson, 2001). As the recursive effect of intergroup contact and intergroup perception suggests, a more favorable perception between white and Asian students precipitates more frequent contact with each other which in turn reduces prejudice (Islam & Hewstone, 1993).

Only a handful of studies have examined the contact between racial minorities. The limited research suggests that black and Latino students tend to have closer ties with each other than with Asian students (Fischer, 2011; Massey, Charles, Lundy, & Fischer, 2006). Furthermore, more frequent contact with Asians may exacerbate prejudice against Asians among blacks and Latinos (Bikmen, 2011; Sidanius, Levin, van Laar, & Sears, 2008). One explanation is that Asians are often perceived as having lower status than whites but higher status than other racial minorities, particularly in academic settings (Bonilla-Silva, 2004; Sidanius & Pratto, 1999). Hence, the asymmetrical effect of interracial contact due to group status, as discussed earlier, can also apply to the interracial contact between Asians and other racial minorities (Bikmen, 2011). Another explanation is that Asian students may pose a threat to blacks and Latinos given Asian students' higher status in academic settings (i.e., the model minority myth). Therefore, black and Latino students may need to derogate Asian students in order to preserve a positive self-image (Fein & Spencer, 1997).

## Methods

### Sample

I used the data from the National Longitudinal Survey of Freshmen (NLSF). NLSF followed a cohort of first-time freshman at 28 selective institutions in the United States from 1999 to 2005 (for a complete list of the 28 institutions see NLSF, 2013). Only American citizens and permanent residents were included in the survey. An Approximate equal number of whites, blacks, Latinos, and Asians were sampled (students of other race or multi-race were not sampled in NLSF). Six waves of data were collected, starting in the fall of 1999 and followed up in the spring of 2000, 2001, 2002, 2003, and 2005. Data were collected through computer-assisted surveys which asked questions about students' background and college experiences, including

interracial contacts and racial perceptions. I used the data collected in the fall of 1999 and the spring of 2003. The final sample consisted of 2943 students with complete information on both waves, including 750 Asian, 744 black, 678 Latino, and 771 white students.

**The Conceptual Model**

I constructed a conceptual model using multi-trait multi-method structural equation modeling (MTMM SEM). In MTMM SEM, two or more traits are measured with two or more methods (Campbell & Fiske, 1959). Each observed variable loads on one trait factor and one method factor. Traits are hypothetical constructs about cognitive abilities, personality attributes, or other stable characteristics such as racial prejudice. Methods can be different tests or observations such as using multiple questions to ask about perceptions of a certain racial group.

Questions about racial perceptions in the NLSF dataset can be understood and structured by the MTMM SEM logic. In the NLSF dataset, multiple sets of questions were asked about students' racial perceptions (e.g., lazy or hard-working, hard or easy to get along with, give up tasks easily or stick to tasks, etc.). Each set consisted of four questions about each race (e.g., on a scale of 1 to 7 where 1 meant lazy and 7 meant hard working, rate white, black, Latino, and Asian students, respectively). In this way, each set of questions constituted a factor in itself (e.g., hard working). Putting several sets together, the perception of each race could be constructed. For example, putting three question sets together (i.e., sticking to tasks, easy to get along, and hard-working), perception of white students could be constructed: how well do white students stick to tasks, how easy is it to get along with white students, and how hard-working are white students. In sum, racial perceptions were the trait factors, and the multiple question sets were the method factors. One question (e.g., how hard-working are white students) loaded on both the trait factor of racial perception of white students and the method factor of hard working.

Using the MTMM SEM logic, I built the conceptual model (see Figure 1) in two steps. First, I selected the three sets of questions used as illustrations in the above (i.e., stick to tasks, easy to get along, hard working). These questions were educationally relevant to college students, and the data were normally distributed. These or similar questions were also used in other studies that utilized NLSF dataset and studies that examined racial prejudices (Dixon, 2006; Fischer, 2011). The three sets of questions, altogether 12 questions, formed seven factors on each wave. Four factors represented the perceptions of each race and three factors represented the three sets of questions for all four races. The seven factors were matched on both waves, totaling 14 factors. Table 1 presents the factor loadings. Then, I added racial contact to the model. Racial contact was measured by four items. Students were asked to rate, on a scale of 0 to 10 (where 0 meant no contact, and 10 meant a great deal of contact), how much contact they had with each racial group.

[insert Figure 1 about here]

[insert Table 1 about here]

**Analyses**

***Research Question One and Two*** (How did white, black, Latino, and Asian students perceive their own race and other races at college entry and college graduation? Did their racial perceptions change during college?). I first used exploratory factor analysis (EFA) to examine whether the survey questions adequately represented the latent factors. For each of the 14 factors, EFA obtained only one eigenvalue greater than 1.0, indicating the saliency of each latent factor (Kaiser, 1958). As shown in Table 1, all factor loadings were well above the cutoff value of .40 suggested by Kahn (2006). Next, I calculated factor scores to capture students' racial perceptions of whites, blacks, Latinos, and Asians on both waves. These factor scores were then used in ANOVA and post hoc Scheffe tests to examine how perceptions of a certain race differed across

the four racial groups at college entry and graduation. Factor scores were used again in paired sample t-tests to examine the change of perceptions between college entry and graduation.

***Research Question Three*** (How often did students participate in within- and between-group racial contacts?). I examined this research question in two ways that complemented one another. I first examined whether students of a certain race had more frequent contact with a particular race. For each racial group, I ran six t-tests among the four racial contact variables, i.e., the amount of contact with white, black, Latino, and Asian students. The cutoff *p* value was set to .008, using Bonferroni method to avoid the inflation of Type I error with multiple t-tests. Another way to answer this research question was to examine how often contact with a particular racial group occurred within and between groups. As such, I conducted ANOVA and post hoc Scheffe tests on each racial contact. For example, the frequency of contact with Asians was compared across the four racial groups.

***Research Question Four*** (How did within- and between-group contacts mediate students' change of racial perceptions?). I conducted the analysis in four steps, and used conventional and statistical indicators to gauge the model fit in each step. Conventional indicators included Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). CFI is a "goodness-of-it" index that measures the relative improvement of model fit compared to the baseline model (i.e., the model assuming the covariance matrix to be zero). RMSEA is a "badness-of-it" index where a value of zero indicates the best fit (Kline, 2011). As Hu and Bentler (1999) suggest, a CFI value close to 0.95 or higher and a RMSEA value close to 0.06 or lower indicate a good model fit. As for the statistical indicator, I used normed chi-square (chi-square divided by degree of freedom) to adjust the sensitivity of chi-square to sample size. A normed chi-square value of 3.0 or less indicates good model fit (Kline, 2011).

The first step was to test the model fit without the mediation of racial contacts in order to ensure measurement invariability between the two waves (Model 1). This step was essential before examining mediation effects, because measurements on both waves must measure the matched latent factors in similar ways. I constrained each pair of the matched parameter estimates on both waves to be equal. Since the fully constrained model did not obtain a good fit, I released three of the 24 constraints suggested by the Lagrange multiplier test to re-specify the model and obtained a good fit (see Appendix Model 1). Only one of the released constraints was factor loading related to racial perception. Thus, measurements between the two waves were almost invariant. Although the normed chi-square value was larger than 3.0, I considered that the re-specified model fit the data given the satisfactory CFI and RMSEA. The large normed chi-square could have resulted from the fact that students of different races experienced this model differently (analyses in the third and fourth step confirmed this conjecture).

The second step was to test the conceptual model shown in Figure 1 (Model 2). As shown in Appendix (Model 2), the original model did not obtain a good fit. Re-specification included adding six correlated errors based on suggestions of the Lagrange multiplier test as well as based on statistical and theoretical meaningfulness (Byrne, Shavelson, & Muthen, 1989; Kline, 2011). The six correlated errors were between racial perceptions of white and Asian students, or between black and Latino students. Studies have shown that white and Asian students are perceived to hold a higher status than blacks and Latinos in education (Bonilla-Silva, 2004; Sidanius & Pratto, 1999). Studies have also shown that white and Asian students tend to develop friendships, while black and Latino students tend to develop friendships (Quillian & Campbell, 2003). In addition, each correlated error was within one factor, which did not invalidate the salience of the factor.

The third step was to use multi-group MTMM SEM to examine whether students from different races experienced the conceptual model in similar ways (Model 3). Each parameter estimate was constrained to be equal across the four racial groups. This step did not yield a decent model fit (see Appendix Model 3), suggesting that students of different races experienced the change of racial perceptions via racial contacts in significantly different ways.

The fourth step was to disaggregate the data into four racial groups and test the model fit for each group (Model 4). As shown in Appendix (Model 4), the conceptual model obtained a good fit for white, Latino, and Asian students. However, the model did not adequately represent black students even with re-specifications. Suggestions indicated by the Lagrange multiplier test to re-specify the model for black students were not theoretically meaningful. As such, I focus on white, Latino, and Asian students when presenting and discussing results related to research question four.

## Limitations

Several limitations should be discussed. First, I measured racial contact by frequency. Although the overall frequency has been shown to significantly predict more favorable interracial perceptions, as discussed previously, a group of researchers have begun to emphasize the quality of interracial contacts. For example, befriending or dating someone of a different race is found to have a more positive effect on reducing prejudice than having negative or neutral interracial contact (CITE; Bowman & Denson, 2011; Hurtado, 2005). I did not delineate positive and negative interracial contact to avoid overcomplicating the model. I instead discuss the results in connection with existing studies that used the NLSF dataset and measured the quality of contact. Connecting results between this and existing studies generates better understandings.

Second, I did not test the clustering effect (i.e., multilevel MTMM SEM) of certain institutional characteristics. An important clustering effect to consider might be institutions' racial climate (e.g., structural diversity or the perceived quality of race relations on campus) (Bowman, 2012; Hurtado, Milem, Clayton-Pedersen, & Allen, 1998; Pike & Kuh, 2006). I did not test any clustering effect for two reasons. It was not the purpose of this study to test whether and how campus racial climate affects racial contacts and the change of perceptions. Further, as an advanced analytical method, multilevel MTMM SEM is still at its developmental stage, though scholars are working to improve it (Heck & Thomas, 2009; Kline, 2011).

Further, the use of correlational self-reports is worth discussing. Although the longitudinal design of NLSF provided advantages in determining causality, the data were correlational (i.e., non-experimental). A common critique against self-reports is that students may use different baselines to report growth (Pascarella, 2001). This study was not affected by such potential weakness, because no self-reported variables were about self-evaluated growth. The relatively large sample size and longitudinal design with invariant and matched measurements on both waves also helped to offset threats to validity in self-reports. Nevertheless, similar to other higher education studies using correlational data, I use such terms as "effect" and "affect" mainly for flow purpose. The causal relationships should be interpreted with caution.

## Results

### Research Question One and Two: In-Group and Out-Group Racial Perceptions

Tables 2 and 3 present the group differences of in-group and out-group racial perceptions. In an ideal situation where no favorable or prejudicial racial perceptions existed, none of the statistics in the two tables would be significant. However, as shown in Table 2, white, black, Latino, and Asian students perceived themselves and one another in significantly different ways

at college entry and graduation. Some group differences persisted during college, while others changed. Overall, there were more group differences in the perceptions of Asian and white students at graduation ($F_{Asian}$ = 22.94, $p < .0001$, $F_{white}$ = 8.87, $p < .0001$) than college entry ($F_{Asian}$ = 9.92, $p < .0001$, $F_{white}$ = 5.29, $p < .01$). However, there were fewer group differences in the perceptions of blacks and Latinos at college graduation ($F_{black}$ = 5.87, $p < .001$, $F_{Latino}$ = 13.19, $p < .0001$) than college entry ($F_{black}$ = 19.70, $p < .0001$, $F_{Latino}$ = 49.14, $p < .0001$). In other words, at college entry, perceptions of Asian and white students were more convergent than those of blacks and Latino students. Four years later, perceptions of Asian and white students grew more divergent, whereas perceptions of Latino and black students grew more convergent.

[insert Table 2 about here]

[insert Table 3 about here]

Table 2 also indicates that racial minorities had a more favorable perception of their own race—in-group favorability—at college entry than at graduation. Interestingly, both Asian and Latino students had more favorable perceptions of themselves than black students had of the two groups at college entry. Four years later black students had more favorable perceptions of both Asians and Latinos than the two groups had of themselves. Such decrease in in-group favorability and out-group prejudice among racial minorities was also shown in the *t* statistics in Table 3. Black students' favorable perception of blacks decreased ($t$ = -3.40, $p < .001$), but their perceptions of Asians ($t$ = 2.56, $p < .05$) and Latinos ($t$ = 2.33, $p < .05$) grew more positive. However, the same pattern was not observed for white students. After four years of college, perceptions of white students remained statistically the same among racial minorities and among white students themselves. White students' perceptions of Latinos grew more favorable ($t$ = 2.15, $p < .05$), whereas white students' perceptions of Asians and blacks remained unchanged.

**Research Question Three: Within- and Between-Group Racial Contacts**

Table 4 presents the frequency of within- and between-group contacts. White students were the most frequently-contacted group for each race, though black students had the same amount of contact with white students as with other blacks. Asians and Latinos had more frequent contact with white students than with their own racial group. The substantial amount of contact with white students was expected since the sample was drawn from highly selective colleges and universities which were predominantly white. Further, white and Asian students had the least amount of contact with Latino students than with other groups. Black and Latino students had the least amount of contact with Asians than with other groups.

[insert Table 4 about here]

Table 5 presents additional information on within- and between-group racial contacts. Contact with white, black, Latino, and Asian students most frequently occurred within group. Regarding interracial contact, Latinos interacted more frequently with white students than blacks or Asians did. Latinos interacted more frequently with black students than Asians or whites did. Latinos also interacted more frequently with Asian students then blacks did. White students interacted more frequently with Asian students than Latinos and blacks did. Black students interacted more frequently with Latino students than Asians or Whites did. Overall, Latino students were the most involved in interracial contacts, whereas white students the least involved.

[insert Table 5 about here]

**Research Question Four: Racial Contacts Mediating the Change of Racial Perceptions**

Table 6 presents the standardized parameter estimates regarding how within- and between-group racial contacts mediated the change of in-group and out-group racial perceptions. Across student groups, racial perceptions at college entry had a substantial effect on racial

perceptions at graduation. This effect was larger than the direct effect of racial contact on racial perception (i.e., based on the magnitude of the standardized parameter estimates). Further, racial perceptions at college entry and racial contacts in college explained substantially different amount of variance in racial perceptions at graduation. For example, perception of black students at college entry and contact with black students in college explained varying amount of variance in other students' perception of blacks at graduation: 18% among Asian, 69% among white, and 59% among Latino students.

[insert Table 6 about here]

Both within- and between-group contacts had a positive, direct effect on racial perceptions. The more contact students had with one another, the more favorable perceptions students developed toward the race of the students with whom they interacted. For example, more contact with white students was associated with a more positive perception of white students among white ($\beta$ = .186, $p$ < .05) and Latino students ($\beta$ = .105, $p$ < .05). More contact with Latinos was associated with a more positive perception of Latinos among white ($\beta$ = .192, $p$ < .05), Asian ($\beta$ = .359, $p$ < .05), and Latino students ($\beta$ = .211, $p$ < .05). However, contact with Asian students was an exception. Contact with Asian students had no effect on white or Latino students' perceptions of Asians. Further, more contact with Asian students was associated with a less favorable perception of Asians among Asian students themselves ($\beta$ = -.158, $p$ < .05).

As for the mediating effect, racial contact with Latino students improved the perception of Latinos among white ($\beta$ = .023, $p$ < .05), Asian ($\beta$ = .051, $p$ < .05), and Latino students ($\beta$ = .066, $p$ < .05). Contact with black students improved the perception of blacks among white ($\beta$ = .036, $p$ < .05) and Latino students ($\beta$ = .064, $p$ < .05). However, contact with white and Asian

students did not mediate the link between perceptions of white and Asian students at college entry and graduation.

Interracial contact had an asymmetrical effect on racial perceptions between the two groups involved. Contact between white and Latino students had a larger direct effect on white students' perception of Latinos ($\beta = .192$, $p < .05$) than Latino's perception of whites ($\beta = .105$, $p < .05$). Contact between white and Latino students improved white students' perception of Latinos ($\beta = .023$, $p < .05$), but not vice versa. Contact between Asian and Latino students had a direct ($\beta = .359$, $p < .05$) and mediating ($\beta = .051$, $p < .05$) effect on Asian students' perception of Latinos, but such contact had no affect or mediate Latino students' perception of Asians.

## Discussion

The change of racial perceptions during college—in particular the evaporation of in-group pride and the decrease of out-group prejudice—lends empirical support to college student development literature. Traditional-age college students are at an important developmental stage for exploration, growth, and formation of views of themselves and others (Chickering & Reisser, 1993).

Similar to other studies (Antonio, 2001; Bowman & Denson, 2011; Chang, Astin, & Kim, 2004; Chang, Denson, Saenz, & Misa, 2006; Hurtado, 2005), the results of this study indicate that interracial contact is an important mediator for students' change of racial perceptions. Further, the results suggest that racial contact within group also contribute to

At the same time, the results also show that racial perceptions at college entry had a substantial and lingering effect on racial perceptions after four years of college. Similar results were found in Fischer's (2011) study that used different sets of questions in the NLSF dataset to examine students' racial attitude.

The results of this study provide confirming evidence for the literature that indicates a positive link between interracial contact and interracial perceptions among college students. White students, who were the least involved in interracial contact, experienced the least amount of perception change toward other races. Latinos, who were the most involved in interracial contact, developed a predominantly favorable perception toward other races. At the same time, Latinos were also more favorably perceived by others. In fact, the only significant and positive racial-perception change among White students was that of Latinos. Conversely, Latinos were the only racial minority that had a more favorable perception of Whites after four years of college. These positive changes were likely associated with the more frequent contact that Latino students had with Whites as compared to the contact that Asian or Black students had with Whites. The greater participation of Latinos in interracial contact, as compared to other racial groups, is shown in other studies (Levin, Laar, & Sidanius, 2003; Odell, Korgen, & Wang, 2009). Fischer (2008), who used the NLSF dataset to examine racial heterogeneity in students' friendships, further confirmed this interpretation. Fischer found that Latino students had the lowest percentage of in-group friends (19 percent), whereas White students had the highest percentage (76 percent). Interracial friendship, as one of the five facilitating conditions for optimal intergroup contact, promotes emotional closeness and salience of interaction (Antonio, 2001; Bowman & Denson, 2011; Pettigrew, 1997).

However, the results of this study also provide confounding evidence against the positive link between interracial contact and interracial perception. All racial minorities had the most frequent contact with white students, equally or even more frequent than minorities' contact within their own racial group. Yet, such contact with whites only changed and improved Latino students' perception of whites. As discussed above, this was likely due to Latinos' more frequent

contact with Whites as compared to blacks or Asians' contact with whites. For Blacks and Asians, their more frequent contact with White students did not change their perceptions of Whites. Yet, their less frequent contact with other races improved their perceptions of those with whom they interacted. Therefore, both quantity and quality of interracial contact are critical to reducing racial prejudice (Bowman & Denson, 2011; Hurtado, 2005). What helps students realize the significant change in racial perceptions via interracial contact varies across groups.

The results of this study support and extend the literature on the asymmetrical benefits of interracial contacts relative to group status (Tropp & Pettigrew, 2005; Saguy, Dovidio, & Pratto, 2008; Bikmen, 2011). This body of literature focuses on the contact and perception predominantly between white and black students, and to a lesser extent, between whites and Latinos. In this study, the contact between White and Latino students confirmed the asymmetrical effect. White and Latino students improved perceptions toward each other, but more so for White students than for Latinos. This study further revealed that contact between Asian and Latino students improved Asian students' perception toward Latinos but not vice versa. It appears that the power status reasoning used to explain the asymmetrical effect between Whites and Blacks/Latinos also applies to the contact between Asians and Latinos. Asian students are often perceived as having higher academic status than Latinos. Such unequal power status can make Latino students feel more anxiety than Asian students when they interact. Since anxiety can hamper benefits of interracial contact (Islam & Hewstone; Pettigrew & Tropp, 2008), contact between Asian and Latino students may help Asians develop a more favorable perception of Latinos but not vice versa.

Black students, the model didn't work for them. Black students in NLSF mainly came from a historically black institution, due to the low representation of black students at selective

institutions. In other words, this model suggests that students of other races in this study came from predominantly white institutions, while black students came primarily from a single historically black institution. It is therefore not surprising that this conceptual model did not work for black students. NOT TRUE, only 47 students from HBCU, delete the 47 black and test again.

## Scholarly Implications

Based on the results, three areas warrant further research. The first area concerns the effects of contact with Asian students. In this study, while contact with Whites, Latinos, and Blacks had a positive effect on interracial perceptions of these groups, contact with Asians had no effect on interracial perception of Asians. Further, while within-group contact generally had a positive association with in-group perception, more frequent contact with Asians was associated with a more negative perception of Asians among Asian students. Neither of the two contrasts between Asians and other racial groups can be adequately understood in light of the scant existing literature. In fact, Asian students, who are mythically perceived as the socially-withdrawn "Model Minority", have relatively been excluded from research and conversations about racial attitudes and race relations in higher education or society at large (Inkelas, 2006). With Asians being the fastest growing racial group in the nation (U.S. Census Bureau, 2013), there is a dire need for research on Asian students' racial attitudes.

Second, the MTMM SEM model, which sufficiently represented White, Latino, and Asian students' change of racial perceptions via racial contacts, failed to represent Black students. Black students in this sample experienced racial-perception change via racial contacts in significantly different ways than the other three racial groups. Echoing other recent studies (Dovidio, Gluszek, John, Ditlmann, Lagunes, 2010; Inkelas, 2006), this result questions whether

the widely theorized and researched White-Black contact is applicable to understanding race relations in a broader context. The dynamics and complexities in race relations require research that goes beyond the White-Black color line, and tackles the unique nature of each racial contact. Further, the increasing number of racial minorities in American higher education also calls for research that examines interracial contact and racial perceptions between racial minorities.

In addition, future longitudinal studies that aim to examine the change of racial perceptions via racial contacts can use MTMM SEM approach. To my knowledge, MTMM SEM, which has been widely used in applied research (Brown, 2006), has not been used to study racial perceptions in educational research. As seen in this study, MTMM SEM is highly applicable and fruitful to studying racial perceptions across multiple racial lines. Future studies can adapt the hypothetical model constructed in this study. For example, an alternative MTMM SEM conceptual model can measure racial perception towards each race (i.e., multiple traits) with different sets of questions (i.e., multiple methods).

## Practical Implications and Conclusion

Overall, this study provided compelling evidence that interracial contact significantly affects—and improves—interracial perceptions. Unlike previous studies that only focused on the contact and perceptions between two racial groups (mostly White and Black students), this study examined race relations across White, Black, Latino, and Asian students. The results contributed to a more comprehensive and nuanced understanding of college students' race relations by breaking new ground and going beyond the White-Black color line. If colleges and universities want to maximize the social benefits of increased racial diversity, they should continue facilitating more frequent interracial contacts, not only between White and minority students, but across all four racial groups. This action is critical, because achieving economic and democratic

prosperity in an increasingly diverse society requires positive race relations across multiple color lines. With a long history of racial exclusion and discrimination in higher education and society (Alexandra, 2012; West, 1994), promoting racial contact and reducing racial prejudice have been and will continue to be unremitting challenges for generations to come. It is the long-term hope that progress in race relations will create “cross-cutting forms of social solidarity and more encompassing identities” (Putnam, 2007, p. 137).

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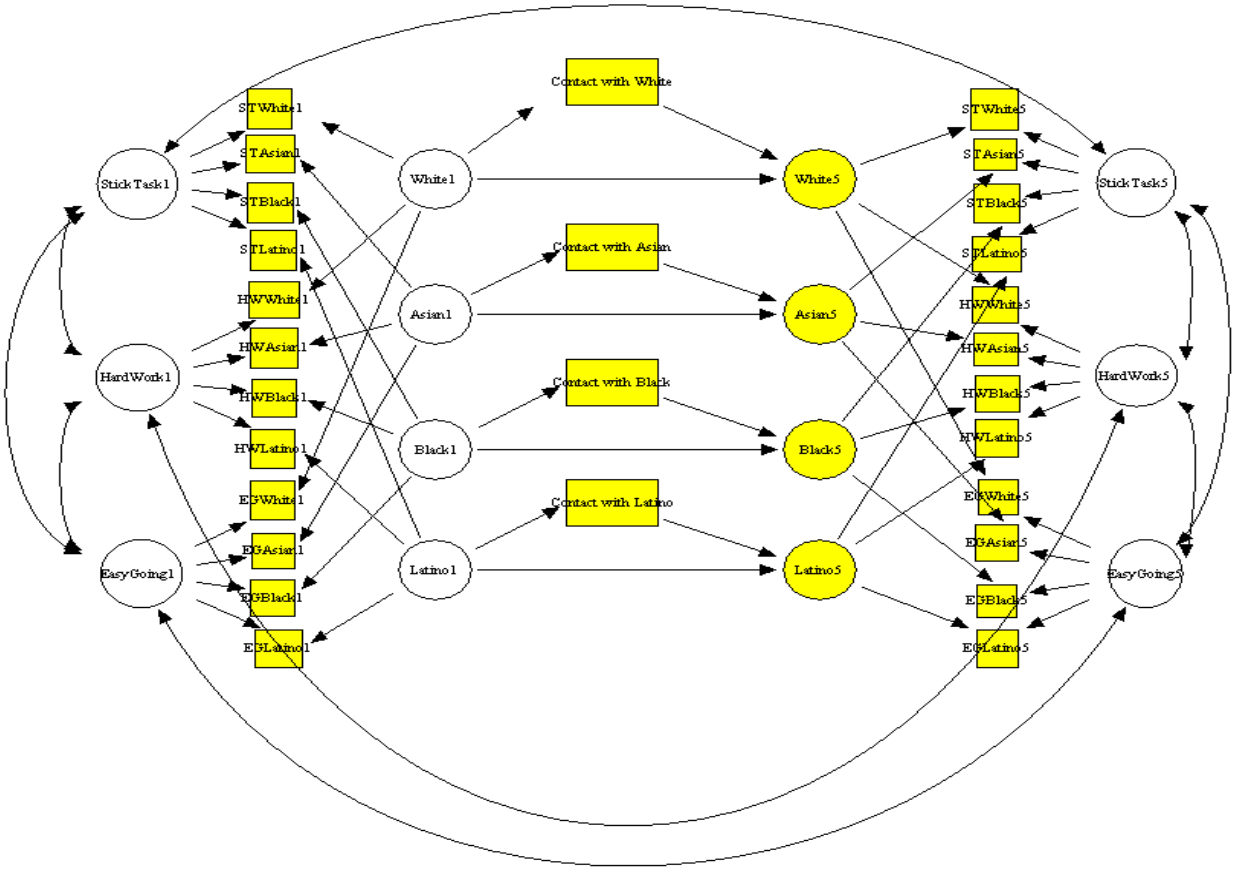


*Figure 1*. Conceptual Model Predicting Effects of Racial Perceptions at College Entry and Racial Contacts in College on Racial Perceptions at College Graduation

*Note*. a. The number "1" refers to factors represented by data from entering freshmen survey (wave 1); the number "5" refers to factors represented by data collected at the end of the fourth year in college (wave 5).

b. "White1" refers to perception of White at college entry; "White5" refers to perception of White at the end of the fourth year in college. The same rule applies to other racial groups.

c. To simplify the visual representation, errors and disturbances were not specified. Correlations between the four latent racial perception factors on wave 1, correlated errors among the four racial contacts, and correlated disturbances among the four latent racial perception factors on wave 5 were also not specified.

Table 1.
*Exploratory Factor Analysis for All Seven Factors Matched on Both Waves*

| Factors | Variables | Factor Loadings | |
|---|---|---|---|
| | | Entry | Graduation |
| Lazy/hard working | Asian, 1 = lazy, 7 = hard working | .61 | .82 |
| | Black, 1 = lazy, 7 = hard working | .80 | .68 |
| | Latino, 1 = lazy, 7 = hard working | .78 | .80 |
| | White, 1 = lazy, 7 = hard working | .56 | .56 |
| Hard/easy to get along | Asian, 1 = hard to get along, 7 = easy to get along | .78 | .85 |
| | Black, 1 = hard to get along, 7 = easy to get along | .81 | .76 |
| | Latino, 1 = hard to get along, 7 = easy to get along | .84 | .82 |
| | White, 1 = hard to get along, 7 = easy to get along | .78 | .75 |
| Give up easily/Stick to task | Asian, 1 = give up easily, 7 = stick with task | .68 | .87 |
| | Black, 1 = give up easily, 7 = stick with task | .78 | .78 |
| | Latino, 1 = give up easily, 7 = stick with task | .81 | .87 |
| | White, 1 = give up easily, 7 = stick with task | .71 | .78 |
| Perception of Asian | Asian, 1 = lazy, 7 = hard working | .77 | .73 |
| | Asian, 1 = hard to get along, 7 = easy to get along | .50 | .71 |
| | Asian, 1 = give up easily, 7 = stick with task | .78 | .82 |
| Perception of Black | Black, 1 = lazy, 7 = hard working | .75 | .79 |
| | Black, 1 = hard to get along, 7 = easy to get along | .63 | .52 |
| | Black, 1 = give up easily, 7 = stick with task | .76 | .84 |
| Perception of Latino | Latino, 1 = lazy, 7 = hard working | .74 | .73 |
| | Latino, 1 = hard to get along, 7 = easy to get along | .61 | .71 |
| | Latino, 1 = give up easily, 7 = stick with task | .79 | .81 |
| Perception of White | White, 1 = lazy, 7 = hard working | .74 | .71 |
| | White, 1 = hard to get along, 7 = easy to get along | .56 | .70 |
| | White, 1 = give up easily, 7 = stick with task | .77 | .79 |

Table 2.
*Differences of In-Group and Out-Group Racial Perceptions across Racial Groups at College Entry and Graduation*

| | College Entry | | College Graduation | |
|---|---|---|---|---|
| | ANOVA | Scheffe | ANOVA | Scheffe |
| Perceptions of Asian | 9.92**** | Black < Asian<br>White < Asian<br>White < Latino | 22.94**** | Asian < Black<br>White < Black<br>Asian < Latino<br>White < Latino |
| Perceptions of Black | 19.70**** | Asian < Black<br>White < Black<br>Asian < Latino<br>White < Latino | 5.87*** | Black < Latino<br>White < Latino<br>White < Asian |
| Perceptions of Latino | 49.14**** | Asian < Latino<br>Black < Latino<br>White < Latino<br>Asian < Black<br>White < Black | 13.19**** | Asian < Black<br>Latino < Black<br>White < Black |
| Perceptions of White | 5.29** | Black < Latino | 8.87**** | Black < Latino<br>Black < Asian |

*Note*. $^{**}p < .01$, $^{***}p < .001$, $^{****}p < .0001$. "<" means having a less favorable perception. For example, Black < Asian for the perceptions of Asian at college entry means Black students had a less favorable perception towards Asian than Asian students had towards themselves.

Table 3.

*T-Test Results Comparing Racial Perceptions at College Entry and Graduation (Graduation – College Entry)*

| | Of Asian | Of Black | Of Latino | Of White |
|---|---|---|---|---|
| Asian students' perceptions | -4.58**** | 2.47* | 1.45 | .13 |
| Black students' perceptions | 2.56* | -3.40*** | 2.33* | -.13 |
| Latino students' perceptions | 2.66** | 1.20 | -4.53**** | 1.01 |
| White students' perceptions | -1.64 | 1.64 | 2.15* | .73 |

*Note*. *$p < .05$, **$p < .01$, ***$p < .001$, ****$p < .0001$.

Table 4.
*Mean Comparisons of Racial Contacts for Each Racial Group*

| | | White | Black | Latino | Asian |
|---|---|---|---|---|---|
| Contact with White | Mean | 9.46 | 8.19 | 8.77 | 8.29 |
| | *SD* | 1.09 | 2.13 | 1.71 | 1.96 |
| Contact with Black | Mean | 5.60 | 8.48 | 6.05 | 5.23 |
| | *SD* | 2.27 | 2.02 | 2.42 | 2.40 |
| Contact with Latino | Mean | 4.49 | 5.66 | 6.72 | 4.53 |
| | *SD* | 4.53 | 2.55 | 2.48 | 2.24 |
| Contact with Asian | Mean | 6.29 | 5.41 | 5.84 | 7.59 |
| | *SD* | 7.59 | 5.84 | 2.55 | 2.24 |
| Contact with White – Contact with Black | T Statistic | 11.10**** | -.78 | 7.75**** | 8.54**** |
| Contact with White – Contact with Latino | T Statistic | 14.99**** | 8.24**** | 5.61**** | 12.30**** |
| Contact with White – Contact with Asian | T Statistic | 8.80**** | 9.17**** | 8.43**** | 6.39**** |
| Contact with Black – Contact with Latino | T Statistic | 4.87**** | 8.95**** | -2.26 | 4.34**** |
| Contact with Black – Contact with Asian | T Statistic | -2.62 | 9.87**** | .75 | -6.06**** |
| Contact with Latino – Contact with Asian | T Statistic | -7.37**** | 1.02 | 3.01*** | -9.58**** |

*Note*. ***$p < .002$, ****$p < .001$, based two-tail t tests.

Table 5.
*Differences in the Amount of Within-Group and Between-Group Racial Contacts*

| | ANOVA | Scheffe |
|---|---|---|
| Contact with Asian | 22.94**** | Black < Asian, Latino < Asian, White < Asian<br>Black < White, Latino < White, Black < Latino<br>(i.e., Black < Latino < White < Asian) |
| Contact with Black | 297.99**** | Asian < Black, Latino < Black, White < Black<br>Asian < Latino, White < Latino<br>(i.e., Asian / White < Latino < Black) |
| Contact with Latino | 13.19**** | Asian < Latino, Black < Latino, White < Latino<br>Asian < Black, White < Black<br>(i.e., Asian / White < Black < Latino) |
| Contact with White | 8.87**** | Asian < White, Black < White, Latino < White<br>Asian < Latino, Black < Latino<br>(i.e., Asian / Black < Latino < White) |

*Note*. ****$p < .0001$. "<" means occurred less frequently. For example, for contact with Latino, Asian / White < Black < Latino means contact with Latino most often occurred with Latino and least often occurred with Asian or White students.

Table 6.
*Standardized estimates of the direct and mediating effects of racial contacts on the change of racial perceptions during college*

| | | White<br>*N* = 770 | Asian<br>*N* = 749 | Latino<br>*N* = 674 |
|---|---|---|---|---|
| Perception of White at college entry on perception of White at graduation | | .579* | .444* | .464* |
| Contact with White on perception of White at graduation | | .186* | .028 | .105* |
| Contact with White mediating perception of White at college entry | | .009 | .000 | -.005 |
| | R-Squared | .377 | .198 | .221 |
| Perception of Asian at college entry on perception of Asian at graduation | | .466* | .637* | .456* |
| Contact with Asian on perception of Asian at graduation | | .026 | -.158* | -.001 |
| Contact with Asian mediating perception of Asian at college entry | | -.002 | -.015 | .000 |
| | R-Squared | .215 | .411 | .208 |
| Perception of Black at college entry on perception of Black at graduation | | .780* | .361* | .643* |
| Contact with Black on perception of Black at graduation | | .171* | .200* | .304* |
| Contact with Black mediating perception of Black at college entry | | .036* | .014 | .064* |
| | R-Squared | .694 | .180 | .587 |
| Perception of Latino at college entry on perception of Latino at graduation | | .587* | .554* | .352* |
| Contact with Latino on perception of Latino at graduation | | .192* | .359* | .211* |
| Contact with Latino mediating perception of Latino at college entry | | .023* | .051* | .066* |
| | R-Squared | .408 | .492 | .214 |

*Note*. *$p < .05$. The results for Black students are not reported here, since the model did not fit Black students. Specific model fitting statistics for the four racial groups are provided in the Appendix.

## Appendix Model Fitting Results

*Model 1 Testing Measurement Invariability between Two Waves*

| | Fully Constrained Model | Re-specified Model |
|---|---|---|
| $\chi^2$ (*df*) / normed $\chi^2$ | 1762.664 (224) / 7.869 | 1623.437 (221) / 7.346 |
| CFI | .945 | .950 |
| RMSEA (90% conf. int.) | .048 (.046, .050) | .046 (.044, .049) |

*Model 2 Testing Model Fit for All Students*

| | Model | Re-specified Model |
|---|---|---|
| $\chi^2$ (*df*) / normed $\chi^2$ | 2542.273 (291) / 8.736 | 1683.448 (285) / 5.907 |
| CFI | .925 | .953 |
| RMSEA (90% conf. int.) | .051 (.049, .053) | .041 (.039, .043) |

*Model 3 Testing Fit of the Fully Constrained Model across Racial Groups*

| | Model |
|---|---|
| $\chi^2$ (*df*) / normed $\chi^2$ | 3948.944 (1403) / 2.815 |
| CFI | .920 |
| RMSEA (90% conf. int.) | .050 (.048, .052) |

*Model 4 Testing Fit for Each Racial Group*

| | White | Asian | Latino | Black |
|---|---|---|---|---|
| $\chi^2$ (*df*) / normed $\chi^2$ | 705.209 (285) / 2.474 | 598.424 (285) / 2.100 | 613.194 (285) / 2.152 | 789.693 (285) / 2.771 |
| CFI | .957 | .962 | .955 | .925 |
| RMSEA (90% conf. int.) | .044 (.040, .048) | .039 (.034, .043) | .041 (.037, .046) | .049 (.045, .053) |

*Note*. *p* value for each model was .00000.