

## ABSTRACT

Title of Document: RACIAL CONGRUENCE AND ITS EFFECTS  
ON SOCIAL INTEGRATION AND SCHOOL  
INVOLVEMENT: A MULTI-LEVEL MODEL

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Several initiatives have been taken in order to diversify schools and communities in advance of scientific research investigating the effects of racial diversity on students. The present study used data from 41,639 students across 87 schools to answer the following research question: To what extent do students with high levels of racial congruence feel more socially integrated and experience higher levels of school participation than similar students who are racially incongruent in their school environments? Racial congruence is defined as attending a school with a high percentage of peers of the same race as oneself. This secondary data analysis used a nested-model (students within school social environments) and found a cross-level interaction between an individual's race and the percentage of same-race peers for certain racial groups. Findings support previous literature concerning the attenuation of individual-level racial group differences in social integration when Asian American students are in racially congruent schools.

RACIAL CONGRUENCE AND ITS EFFECTS ON SOCIAL INTEGRATION AND  
SCHOOL INVOLVEMENT: A MULTI-LEVEL MODEL

By

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## Chapter 1: Introduction

Social phenomena such as a recent increase in immigration have led to a dramatic change in the demographics of today's schools. This increase in diversity has resulted in difficulties for both students and school systems. Schools struggle to provide quality teaching and appropriate assessments for students who speak a variety of languages other than English. In addition, the inequity in educational outcomes for some groups of minority students in schools has been widely documented. Research has documented the poor academic outcomes for minority students, such as an overrepresentation in special education (O'Reilly, 1997) and low school completion rates (KewelRamani, Gilbertson, Fox, & Provasnik, 2007). Lipman (1997) also found that school culture can unintentionally perpetuate the underachievement of minority students.

As a result, there are many initiatives intended to increase integration and close ethnic/racial achievement gaps. Some research has documented the efficacy of race-conscious admissions processes (N.C. Gottfredson, Panter, & Daye, 2009), the creation of ethnic student organizations (Museus, 2008), and the development of magnet schools (Banks & Green, 2008). Many studies have investigated group ethnic social-emotional or academic outcomes such as school completion rates (Ostrove & Long, 2007). Despite this, not nearly enough scientific research has been conducted on student outcomes to justify the resources needed by these programs, or learn if there are potential negative effects on schools or students (Kravitz et al., 1997). For example, while there may be an overall mean decrease in racial prejudice, there may be an increase in some individuals' feelings of isolation and alienation, especially for

those who may feel displaced. Among other outcomes of interest, it is important to investigate the social-emotional outcomes for individuals, such as social integration and school participation, as these are linked to psychological well-being and academic success (Barden, Garber, Leiman, Ford, & Masters, 1985).

Therefore, it is important to investigate how individuals respond to the racial composition of their schools. I put forth the following research question: To what extent do students with high levels of racial congruence feel more socially integrated and experience higher levels of school participation than similar students who are racially incongruent in their school environments?

## Chapter 2: Racial Congruence and Social Context

Interest in assessing the effects of social contexts (Tran, 1987), including contextual congruence has increased in recent years, although the number of empirical studies is still limited. Contextual congruence is the extent to which an individual is similar to the aggregate of individuals present in his/her environment, which may be a neighborhood, community, or school. In the literature, contextual congruence/incongruence is also referred to as discordance (LaVeist & Nuru-Jeter, 2002), statistical minority/majority (Kaufman, Gregory, & Stephan, 1990), and co-ethnicity (Schnittker, 2002). Contextual effects can be defined as the effect of the aggregate social characteristics of the environment's inhabitants that are not due simply to the individual characteristics themselves. Instead, they are an emergent property of social aggregates. Tweed et al. (1990) wrote, "One important area of concern in the study of contextual effects has been the investigations of the relationships between the congruence of neighborhood and individual sociocultural characteristics (e.g., race, occupation, education, income, or religion) and psychosocial adaptation." (p. 392). This study of contextual effects focuses on the sociocultural characteristic of race; other sociocultural characteristics may include social class and religion. In this paper, race will be defined as the identification of oneself as being in one of the following categories: American Indian, Asian American, Black, White, or Hispanic.

The literature on contextual effects may be distinguished by three characteristics of the study: the social characteristic being considered (e.g. race, religion, socioeconomic status), the people considered congruent (e.g. teacher-



student, doctor-patient, peers, school, community), and outcome variable (e.g. cognitive or social outcomes). It is important to note that there may be a qualitative difference between teacher-student and doctor-patient congruency and peer or community congruency, since the former indicates a hierarchical relation. Theoretically (and practically), findings from the two different types of congruency (hierarchical vs. equal social structures) may be attributed to different causes, such as accessibility and power. For this reason, and because the research questions pertain to peers, this literature review will focus on congruency among individuals of equal social status, although several studies exist concerning doctor-patient and teacher-student congruency (e.g. Oates, 2003; LaVeist & Nuru-Jeter, 2002; Mahlios, 1981). The majority of these studies support the proposition that congruent dyads result in more positive outcomes, such as patient satisfaction and positive teacher perceptions. This review will be organized into two sections: studies investigating social-emotional outcomes and studies investigating cognitive or academic outcomes.

### **Studies with Social-Emotional Outcomes**

The majority of studies with social-emotional outcomes use race or ethnicity as the social characteristic upon which congruency is measured. Tweed et al. (1990) investigated the effects of the exposure to racially incongruent residential environments on depressive psychopathology. He noted that previous studies investigating racial congruence have been primarily service utilization studies, from which conclusions may be misleading (e.g. Faris & Dunham, 1939; Klee, Spiro, Bahm, & Gorwitz, 1967; Levy & Rowitz, 1973; Mintz & Schwartz, 1964 as cited in Tweed et al., 1990). Service utilization studies are unreliable because they are often

influenced by geographic or other barriers to service, rather than the existence of a psychological disorder (Owens, 1941). Tweed et al.'s analysis was limited to Black-White interactions, which is a limitation of the existing literature (Schnittker, 2002). The secondary data analysis supported the inference that racial congruence has an effect on depressive psychopathology, especially for Black individuals. Specifically, African Americans in moderately congruent neighborhoods reported more depressive symptoms than African American residents in highly congruent neighborhoods.

Schnittker (2002) sought to investigate the relationship between ethnic congruency or “neighborhood co-ethnicity,” English language use, and Chinese cultural participation with self-esteem in Chinese immigrants. More specifically, he was interested in whether or not the effects on self-esteem of English language use and Chinese cultural participation was contingent upon ethnic congruency.

Schnittker found that there was no main effect for cultural participation or ethnic congruity on self-esteem. But, there was an interaction such that participation in Chinese cultural activities is helpful in neighborhoods that are highly congruent (predominately Chinese), but not in neighborhoods that are incongruent. These results are consistent with the interpretation that being or acting similarly to those around you has a positive effect on socio-emotional outcomes.

One limitation of Schnittker's study was the questionable validity of the self-reported congruency measure. Participants were asked to rate their own neighborhoods as “all Chinese”, “mostly Chinese”, and “no Chinese”. It is possible that participants may have been inaccurate about how many Chinese residents

actually lived in their neighborhood and, thus, this may have been a measure of perceived ethnic congruence rather than true ethnic congruence.

Rosenberg (1962) assessed the relationship between religious congruence and depressive symptoms. Like Schnittker (2002), Rosenberg also asked participants to estimate what proportion of the community in which they were raised was Catholic, Protestant, and Jewish. Results suggested that Catholic, Protestant, and Jewish students living in incongruent areas suffered from lower self-esteem, more psychosomatic symptoms, and depressed affect than those living in moderately or highly congruent neighborhoods. There was little difference between individuals from highly and moderately congruent environments. This may suggest that it matters less that everyone in the neighborhood is of the same religion, but more that there are enough residents of the same religion to provide social support, feelings of belonging, and a sense of acceptance.

In general, studies investigating the effects of contextual congruence with social-emotional outcomes are consistent with the hypothesis that individuals living in congruent environments experience more positive psychological outcomes, including self-esteem and fewer depressive symptoms. Tweed et al. (1990) suggested two potential explanations for this phenomenon. First, individuals living in incongruent areas may have an increased chance of experiencing prejudice and hostility. Second, incongruent environments may make it more difficult to form social support systems in order to alleviate the stress resulting from the prejudice or hostility.

There may be other potential negative effects from living in culturally incongruent environments. A racially incongruent individual may have a different cultural background and knowledge base than the people in his environment. It may take cognitive resources to either learn information not known by the person's native culture or to teach others information from the person's own background. Furthermore, it may take cognitive and emotional resources to behave in a culturally appropriate manner, resulting in "fatigue." Lastly, incongruent individuals may feel "on stage" and lack sufficient opportunities to relax and be at ease.

### **Studies with Academic Outcomes**

Several studies have investigated the effects of contextual congruence on academic outcomes, such as attachment to school, academic engagement, and classroom behavior. Ostrove and Long (2007) surveyed 324 students at a selective, middle to upper-middle class liberal arts college in the Midwest to examine the role that social class congruence plays in students' experiences at the university level. Their analyses suggested that social class background does have important implications for sense of belonging and adjustment to college, with weaker effects on overall experience and academic performance. However, the study may be limited in its generalizability due to its sample. Similarly, Tinto (1993) noted that when students who were racial minorities attended predominately Caucasian institutions, they had more academic difficulties and experienced more feelings of isolation than did the student population in general.

Another study investigated racial congruence on classroom behavior (Kaufman, Gregory, & Stephan, 1990). Teachers rated students in order to assess

aggressive behavior, moody or withdrawn behavior, and learning difficulty. Results aligned with those of previous studies: students who were in racially incongruent classrooms seemed to exhibit higher levels of maladaptive behavior. However, the study only used teacher reports; clinical observations were not conducted. Therefore, the study may have been investigating teacher perceptions of students, rather than maladaptive behavior or psychological effects. The study also found that Caucasian children in incongruent classrooms responded with greater aggression and acting-out behavior, while Hispanic children in incongruent classrooms responded to their environments with greater moodiness and withdrawn behavior. Kaufman et al. speculated that differences may have been due to cultural norms.

Several studies have examined the effects of congruence on the transition into upper-level schooling, specifically from middle school to high school and from high school to college. French, Seidman, Allen, and Aber (2000) examined how changing levels of racial congruence across the transition to high school affects school adjustment and racial identity development. Using a multiple regression approach in which congruence was assessed net of prior racial identity, the researchers found that only White students were significantly affected by a change in congruence. Furthermore, Caucasian ethnic-group esteem increased when staff congruence was high. However, their secondary data analysis had a relatively small sample size ( $N=144$ ) and the researchers failed to use hierarchical linear modeling (HLM) or account for the nested nature of the data.

Adan and Felner (1995) studied the effects of racial congruence on college performance by comparing group means of Black students attending Predominately

Black Universities (PBUs), Black students attending Predominately White Universities (PWUs), and White students attending PWUs. The findings suggest that African American students in PWUs have more difficulties than the other two groups. Furthermore, an interaction effect was found such that Black students adjust to college better if they have higher levels of prior interracial experience and attend a PWU, but adjust to college more poorly if they have higher levels of prior interracial experience and attend a PBU.

Johnson, Crosnoe, and Elder Jr. (2001) used a multi-level model to determine how school-level racial/ethnic composition affected school attachment and academic engagement in middle and high schools. They found that the racial composition of schools does matter, such that students who attend schools with more peers of a similar race are more attached to school, although effects were small. The effects of school-level racial composition on academic engagement were not significant.

Portes and Hao (2004) used the Children of Immigrants Longitudinal Study (CILS), the largest data source on second generation immigrants, to investigate the effects of school ethnic composition on individual-level academic achievement. When they included Asian American students in their analyses, they found that high ethnic congruency (or a high percentage of coethnics) within the school attenuates the effects of individual ethnicity. For example, Asian students have lower mean grade point averages when attending schools with a higher proportion of Asian students. On the other hand, Mexican American students have a higher probability of dropping out of school when attending higher SES (and presumably less ethnic) schools.

The literature on the effects of congruency on academic outcomes is fairly consistent, with racially congruent school environments leading to more positive outcomes such as school completion rates, better classroom behavior, and stronger academic performance, except for Asian American students. The positive effects of ethnicity for Asian American students decreases when Asian American students are in racially congruent schools. Therefore, the literature suggests that individual-level racial effects are attenuated when schools are racially congruent.

The literature on academic outcomes agrees with the socio-emotional literature on the effects of contextual congruence for certain racial groups, including Black and Hispanic participants, such that higher congruence leads to more positive outcomes. However, the socio-emotional literature is unclear about the attenuation of individual-level racial effects in highly congruent environments for those whose racial identity has positive effects. If it is true that individual-level effects are attenuated in highly congruent environments, the Caucasian or Asian American group would experience less positive social-emotional outcomes, such as feelings of social alienation, than expected when in highly congruent environments. This is another gap in the literature that I intend to address. The following section discusses some of the other shortcomings of the literature.

### **Limitations of Prior Research**

Much of the research that has been conducted to address the consequences of congruence versus incongruence on student well-being have used case study methods, have small sample sizes, or used inappropriate statistical techniques. Ostrove and Long (2007) suggested that larger sample, systematic research on this topic be

conducted. Thus, this study uses a large, diverse sample of over forty-thousand students across eighty-seven schools.

Furthermore, existing studies often fail to use appropriate statistical models. Inadequate modeling techniques include limiting participants to one school, university (e.g. the study by Ostrove & Long, 2007), or community; or they fail to address the contributions of the environmental effects beyond individual contributions (e.g. the study by French, Seidman, Allen, & Aber, 2000, which uses ordinary regression rather than multi-level models). Therefore, the present study will attempt to disentangle the effects of person-environment ethnic congruence on individuals' feelings of belonging and participation from those of individuals' characteristics and from those of the racial composition of schools by using a multi-level model.

In addition, other studies that have purported to show contextual effects above and beyond individual contributions (Roscigno, 1998; Roscigno, Tomaskovic-Devey, & Crowley, 2006) have failed to measure individual ability or other individual characteristics. Specifically, Roscigno (1998) found that minority achievement was influenced by school-level racial composition, but did not include individual achievement measures such as prior achievement or prior educational experience.

It is evident that the existing research is limited, especially when considering each combination of sociocultural characteristic, sample characteristics, and outcome. Despite studies that have investigated acculturation, self-esteem, and sense of belonging among Asian immigrants, as a presumed effect of the degree to which an individual is racially congruent with his or her neighbors (Ying, 1995), such research



has primarily involved samples from older populations (Schnittker, 2002). The present study fills a gap in the literature by focusing on adolescents in both middle and high schools from ages eleven to seventeen.

The research that has been done has tended to focus on Black-White interactions (Schnittker, 2002). Very few studies exist where several races are measured, limiting the generalizability of results or statistical models. Especially in the current socio-cultural climate of America, it is important to take into account more than two races or other socio-cultural characteristics. In addition, the existing literature uses limited methods of measuring congruence, such as self-reported estimates about congruency. Other studies dichotomize congruency into “high congruency” or “low congruency” groups with arbitrary cut-off points. Thus, this study includes four racial categories and measures congruency as a continuous variable by using the percentages of same-race peers within the school.

Furthermore, the existing research tends to be outdated with the majority of studies being conducted before 2000 (e.g. Adan & Felner, 1995; Kaufman, Gregory, & Stephan, 1990; Mahlios, 1981; Rosenberg, 1962; Tweed et al., 1990). The racial composition and culture of the United States is consistently changing and literature must be kept up to date. More and better research on this topic should be conducted.

## Chapter 3: Method

### Sample

The Effective School Battery (ESB) was originally created as a diagnostic tool used to assess school climate in order to provide a basis for planning and evaluating school improvement programs (G.D. Gottfredson, 1999). Since its creation in the early 1980s hundreds of schools have elected to have their students complete the ESB; this study uses the data collected between November 1999 and May 2007. During those eight years, some schools chose to have their students complete the ESB several times. Only the most recent data from such schools were included. Specifically, if a school completed the ESB in 2000, 2003, and 2005, only the data from 2005 were included. Furthermore, schools with fewer than 35 students completing the ESB were not included. The resulting sample included 41,639 students across eighty-seven schools.

In order to see if a cultural change between data collected in 1999 and 2007 would affect the results, initial analyses investigated the effects of the year the data was collected on school participation and social integration. The year that the data was collected did not significantly affect any of the racial groups or outcomes ( $0.21 < p < 0.936$ ), except for the social integration of American Indian students. However, since this study excludes American Indian students from the analyses (discussed further below), these findings are not problematic.

Students ranged from ages 11 to 17, with a mean age of approximately 14.5 years. Schools were from urban, suburban, and rural areas. In order to determine the race of the student, students were asked “Which of the following best describes you?”

and given the following choices: American Indian, Asian American, Hispanic, Black, White, or Other. For simplicity, this variable will be called “racial self-identification” even though it is understood that Hispanic (or any of the other categories) may or may not technically be a race, but rather an ethnicity or other descriptor. Students were limited to selecting one race and those choosing the “Other” category were excluded from the analyses due to the ambiguity of this self-designation. In addition, students failing to provide racial self-identification information were also excluded, resulting in 36,863 students across eighty-seven schools. In general, the racial composition of the sample is similar to national norms (National Center for Education Statistics, 2009), but the sample under-represents Hispanic students.

For the statistical analysis, racial self-identification is represented by a vector of indicator variables, in which  $X_1 = 1$  if the individual is Asian American and 0 otherwise,  $X_2 = 1$  if the individual is Hispanic and 0 otherwise,  $X_3 = 1$  if the individual is Black and 0 otherwise,  $X_4 = 1$  if the individual is White and 0 otherwise, and  $X_5 = 1$  if the individual is American Indian and 0 otherwise.

School ethnic composition was calculated through the aggregate of individual self-identifications at level-1. Table 1 describes the variability of the racial composition of the eighty-seven schools in the sample. Ten schools had no American Indian students. Therefore, the American Indian racial percentage was not used for the level-2 analyses.

Lastly, the racial self-identification data are ipsative in nature because respondents were limited to choosing only one racial category. For example, at the individual-level, a student identifying himself as Hispanic is *ipso facto* not Black

given that multiple responses were prohibited. At the school-level, if the majority of the students are White, then *ipso facto* other races are not the majority, an upper limit exists, and there is a negative correlation between the racial categories. Therefore, excluding the percentage of American Indian students at level-2 helps to ameliorate some of the multicollinearity problem.

In addition to racial group membership, this study also used the social integration scale and school participation scale from the ESB. The social integration scale is intended to be focused on affect or how socially integrated students feel. The school participation scale is intended to be more behaviorally focused and measures the amount that students participate in school activities. This distinction and its importance is described more thoroughly in Johnson, Crosnoe, and Elder (2001).

### **Response Variables: Social Integration and School Participation**

The Social Integration scale ( $\alpha = 0.64$ ) of the ESB is intended to measure “the degree to which people in an environment are integrated with or alienated from the social order in a school” (G.D. Gottfredson, 1999, p. 16). It also relates to how comfortable people feel in their environment. The scale consists of five items, adapted from Srole’s (1956) Anomia Scale and McClosky and Scharr’s (1965) Anomy Scale to include more school-related content. It also includes alienation items from the School Initiative Evaluation (Grant, Grant, Daniels, Neto, & Yamasaki, 1979) and other previous studies. Each item was dichotomous such that the respondent could choose True which yielded a score of 1 or False which yielded a score of 0. The mean was then calculated from all five items. A score of one indicates social integration while a score of zero indicates social alienation, with

some items being reverse-coded. Table 2 lists the wording for each item, the corrected item-total correlation and squared multiple correlation for each item, and alpha if each item were deleted ( $M = 0.67$ ,  $SD = 0.28$ ).

The school participation scale ( $\alpha = 0.57$ ) consists of twelve items, most of which were adapted from the National Longitudinal Study questionnaire (Ingels & Dalton, 2008). It is intended to measure the extent to which students participate in the school and the community through extra-curricular activities, community organizations, and other contributions. Each item was dichotomous such that the respondent could choose Yes which yielded a score of 1 or No which yielded a score of 0. The mean was then calculated from all twelve items. A score of one indicates a high level of school participation while a score of zero indicates no school participation. Table 3 lists the wording for each item, the corrected item-total correlation and squared multiple correlation for each item, and alpha if each item were deleted ( $M = 0.22$ ,  $SD = 0.18$ ). The two dependent measures were significantly correlated ( $r = .10$ ,  $p < .01$ ) as existing literature has suggested (Johnson, Crosnoe, & Elder, 2001) they should be. A visual inspection of scatterplots suggests that there were no outliers for either dependent variable, which, if present, may have inflated standard errors (Seltzer, 1993).

### **Statistical Model Description**

The statistical model for each response variable can be represented as a 2-level regression model, with a within-school model involving individual-level covariates at level-1 and school-level influences at level-2. Equations 1 through 5 describe the model below. As illustrated in Equation 1 (see Appendix), group mean

centering (where each  $X_{hij}$  is expressed as a deviation from its school mean  $X_{hi\bullet}$ ) at level-1 is appropriate, as suggested by Enders and Tofighi (2007).

$$Y_{ij} = \beta_{1j}(X_{1ij} - X_{1\bullet}) + \beta_{2j}(X_{2ij} - X_{2\bullet}) + \beta_{3j}(X_{3ij} - X_{3\bullet}) + \beta_{4j}(X_{4ij} - X_{4\bullet}) + \beta_{5j}(X_{5ij} - X_{5\bullet}) + r_{ij} \quad (1)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}W_{1j} + u_{1j} \quad (2)$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}W_{2j} + u_{2j} \quad (3)$$

$$\beta_{3j} = \gamma_{30} + \gamma_{31}W_{3j} + u_{3j} \quad (4)$$

$$\beta_{4j} = \gamma_{40} + \gamma_{41}W_{4j} + u_{4j} \quad (5)$$

In Equation 1,  $Y_{ij}$  is the individual-level outcome variable (social integration or school participation) for person  $i$  in school  $j$ ,  $\beta_{hj}$  is the slope of the regression of the outcome variables for each race in the  $j^{\text{th}}$  school (where  $h = 1$  for Asian American,  $h = 2$  for Hispanic,  $h = 3$  for Black,  $h = 4$  for White, and  $h = 5$  for American Indian),  $X_{hij}$  is the value of race  $h$  for the  $i^{\text{th}}$  student in the  $j^{\text{th}}$  school,  $X_{h\bullet}$  is the mean of race  $h$  in the  $j^{\text{th}}$  school (or the percentage of students of race  $h$ ), and  $r_{ij}$  is the residual error for the  $i^{\text{th}}$  student in the  $j^{\text{th}}$  school. An intercept was not included in the model because the use of a reference group would require the interpretation of the level-1 regression coefficients as differences in relation to a referent group. This was type of group comparison was not at the focus of this research. In order to answer the research question (the effects of the racial percentages at level-2 on the  $\beta_{hj}$  coefficients at level-1), a reference group is not needed at level-1.

Equations 2 to 5 investigate the effect of having a large percentage of same-race peers within an individual's school. Here,  $\beta_{hj}$  is the slope of the regression coefficient for the two outcome variables,  $W_{mj}$  is the percentage of race  $m$  in the  $j^{\text{th}}$  school, and  $u_{mj}$  is the residual error for the  $j^{\text{th}}$  school. In this instance, the slope coefficients for level-1 predictors are of substantive interest, specifically  $\beta_{1j}$ ,  $\beta_{2j}$ ,  $\beta_{3j}$ ,

and  $\beta_{4j}$ . Positive gamma coefficients ( $\gamma_{mj}$ ) for racial percentages at level-2 for each level-1 slope coefficients imply that the relationship between individual race and social integration or school participation is increased by having a higher percentage of students of race  $m$  in the school. When the percentage of same-race individuals has no statistically significant effect on  $\beta_{1j}$ ,  $\beta_{2j}$ ,  $\beta_{3j}$ , or  $\beta_{4j}$ , then  $\beta_{hj}$  will equal  $\gamma_{m0}$ . Only the percentage of same-race students were added to the model and the equation for  $\beta_{5j}$  was excluded, as illustrated, in order to help alleviate the negative effects of the multicollinearity and redundancy of the data, as described earlier.

## Chapter 4: Results

### **Social Integration**

All of the racial self-identification predictors were significant or nearly so ( $\alpha = 0.05$ ) at level-1 (Asian American:  $p \approx .01$ ; Hispanic:  $p < .01$ ; Black:  $p \approx .06$ ; White:  $p < .01$ , and American Indian:  $p \approx .01$ ), using group mean centering. Level-2 equations were then built by adding the percentage of the corresponding race to the equations for each respective  $\beta_{hj}$ . Percentages that were significant at the 0.05 level were included in the model. This was done for each slope coefficient in descending order of the percentage of students in each ethnic group in the overall sample. Specifically, the percentage of White students was added to the equation with  $\beta_{4j}$  dependent first, because  $\beta_{4j}$  is the coefficient for the percentage of White students in school  $j$ , and White is the most numerous ethnic/racial category in the total sample. The regression coefficients, standard errors, and  $p$  values for the final fitted model can be found in Table 4. Table 5 contains the variance components and proportion of variance explained.

Adding additional race/ethnic percentages to each  $\beta_{hj}$  equation (i.e. adding the percentage of White students at the school-level to the regression equation for Asian American social integration at level-1) caused the level-1 coefficients to become unstable, their standard errors to increase, and were mostly insignificant. Thus, they were excluded from the analyses and final model.

### **School Participation**

In order to build the school participation model, the same procedure for sequential testing was used. The Asian American, Hispanic, and Black racial self-



identification predictors were significant ( $\alpha = 0.05$ ) at level-1 (Asian American:  $p \approx .03$ ; Hispanic:  $p < .01$ ; Black:  $p \approx .03$ ). The White and American Indian predictors had no statistically significant effect on school participation (White:  $p \approx .14$ ; American Indian:  $p \approx .22$ ), using group-mean centering. Even though the White racial category was not statistically significant, it remained in the final model in order to investigate the effects of racial congruence for the largest subsample. The American Indian predictor was not included in the final model.

Level-2 equations were also built using a forward selection procedure by adding the corresponding racial percentages at level-2 to each of the equations for the regression coefficients, with the level-2 equations developed in the following order: White, Black, Hispanic, and Asian American. Only the percentage of Asian American students had a significant effect ( $\alpha = 0.05$ ) on school participation. Table 6 shows the coefficients, their standard errors, and  $p$  values, and Table 7 shows the variance components and proportion of variance explained.

## Chapter 5: Discussion

### **Social integration**

All the racial categories had positive coefficients when the predictors were added to level-1, except for American Indians. This suggests that there are negative effects on social integration for American Indian students. As a result, practitioners should be encouraged to make sure that American Indian students are socially integrated into their schools.

Neither Black nor Hispanic students' social integration was significantly affected by the percentage of same-race students within their schools according to the models examined in the present research. In contrast, both White and Asian American students are significantly affected by racial congruence. Furthermore, for both racial groups the positive individual-level effects were attenuated as the percentage of same-race peers increased within the school. More specifically, when race is accounted for solely at the individual-level, both White and Asian American students feel more socially integrated than their peers. However, when racial congruence is taken into account, those positive effects decrease and students feel less socially integrated, as suggested by the negative gamma coefficients. The low magnitude of the gamma coefficients indicate that these effects are small, though, similar to the Johnson, Crosnoe, and Elder (2001) findings about school attachment.

Specifically, for Asian American students, a 10% increase in the percentage of same race peers results in a fifth of a standard deviation decrease in social integration. Or, moving from a school in the 25<sup>th</sup> percentile to the 75<sup>th</sup> percentile (an approximate 5% discrepancy) of percent Asian American students would result in a tenth of a

standard deviation decrease. The decrease in social integration for Asian American students is consistent with the findings of Portes and Hao (2004).

### **School participation**

Only Asian American students' school participation was significantly affected by the percentage of other Asian American students within the same school; Hispanic, Black, and White students were not. Similarly, Crosnoe, Johnson, and Elder (2001) found that fewer racial groups had significant findings for their behaviorally focused variable compared to their affective response variable.

Similar to the social integration findings, Asian American students were *negatively* affected by an increase in the percentage of other Asian Americans. Specifically, a 10% increase in the percentage of Asian American students in the school resulted in a fifth of a standard deviation decrease in school participation. Or, moving from a school in the 25<sup>th</sup> percentile to the 75<sup>th</sup> percentile (an approximate 5% discrepancy) of percent Asian American students would result in a tenth of a standard deviation decrease.

In conclusion, the findings for both social integration and school participation recall the Portes and Hao's (2004) findings about the attenuation of the individual effects of race. Portes and Hao (2004) found a similar attenuation effect with a different outcome variable (academic achievement) in a different sample. Here, the positive effects of being White or Asian American on social integration and school participation were diminished as the percent of same-race peers increased.

### **Implications and Speculations**

For Asian American students, the positive individual effects of being Asian on social integration were attenuated in racially congruent environments. This may be explained through a few speculations. First, there are very few schools whose student body is majority Asian American. As a result, Asian American students may be used to being a minority and the presence of more Asian American students may introduce confusion and tension. Asian American students may not know where they fit in, or whether or not to associate with other Asian American students or with the majority when there is a sizable minority of other Asian students.

In addition, Asian American students often do *not* share a common language, but instead may speak Korean, a Chinese dialect, Japanese, or another language. Although Asian American students may share some physical characteristics, they may not share the same language or culture the way that other minority (i.e. Hispanic) students may. As a result, a higher percentage of Asian American students within a school may not necessarily lead to more belonging or feelings of social integration. As a result, schools that have a high percentage of Asian American students should be more attentive to the social integration of their Asian American population. Teachers should be informed of this finding so that they do not assume that the Asian American students feel comfortable and integrated in the classroom, as some stereotypes may suggest.

Results about school participation found a cross-level interaction for Asian American students, such that the more Asian American students attending the same school decreases the average school participation of Asian American individuals.

Therefore, schools that have a high number of Asian American students should work towards increasing the school participation of all Asian American students.

### **Limitations and Suggestions for Future Research**

There are several limitations of the present study which must be addressed. First, the sampling may limit the generalizability of this research. The schools chose to have their students complete the ESB; schools were not randomly chosen to participate in the study. Therefore, there may be a qualitative difference between included schools and other schools.

Second, research has found that self-segregation exists, such that even if schools are diverse, students may choose to interact mainly with racially congruent peers (Clack, 2005). The present study implicitly assumes random association and does not account for self-segregation. Therefore, the percentage of same-race peers may not effectively capture racial congruence, since students may choose to only associate with same-race peers even if only a small percentage of same-race peers exists within the school. Such students, in this study, would be classified as being racially incongruent, even if their smaller social network is highly congruent.

Therefore, future studies may wish to investigate the effects of self-segregation on racial congruence, school participation, and social integration.

Next, both of the dependent measures, social integration and school participation, had low reliability ( $\alpha \approx 0.64$  and  $\alpha \approx 0.57$ , respectively). The low reliability of the scales may have attenuated the relationships with the race variables and, as a result, the significant relations found may be stronger than suggested by the present estimates. Future studies may wish to follow a similar methodology and

analysis procedure, but use response measures with higher reliability to see if stronger relationships are found.

If schools do implement programs or methods to increase the social integration or school participation of certain racial groups, evaluations of such efforts would be required to learn if they are effective. Future research may wish to investigate the feasibility and efficacy of such interventions.

The results of the present study should be replicated in other samples and with other measures of racial (or religious or cultural) congruence. Even though it has been shown that there is an effect of racial congruence in U.S. samples, it still remains an open question whether this phenomenon occurs in other cultures.

Lastly, more research is needed to gain insight into the processes behind the congruence phenomenon. This study only looks at the effects of racial congruence on a self-reported measure of social integration and school participation. Other studies may wish to investigate how students' perceptions of races differ in high versus low congruence environments.

## Appendices

Table 1

*Racial Composition at the School-Level (N = 87)*

Race	Minimum	Maximum	Mean (SD)	25 <sup>th</sup> Percentile	75 <sup>th</sup> Percentile
American Indian	0.0	25.5	2.7 (4.1)	0.9	3.1
Asian American	0.2	20.8	4.6 (4.0)	1.9	7.1
Hispanic	0.5	54.2	11.6 (10.5)	4.8	14.1
Black	0.5	79.4	24.5 (17.3)	12.1	32.6
White	0.7	81.4	43.8 (20.4)	29.5	62.1

*Note:* Values are reported in percentages.

Table 2

*Social Integration Scale: Items and Reliability*

Item	Corrected Item-total Correlation	Squared Multiple Correlation ( $R^2$ )	Alpha if Item Deleted
I feel like I belong in this school.	0.32	0.11	0.63
Life in this town is pretty confusing. <sup>a</sup>	0.29	0.09	0.64
I feel no one really cares much about what happens to me. <sup>a</sup>	0.44	0.21	0.57
I often feel awkward and out of place. <sup>a</sup>	0.45	0.23	0.56
These days I get the feeling that I'm just not a part of things. <sup>a</sup>	0.49	0.27	0.55

*Note:* Cronbach's Alpha = 0.64; M = 0.67; SD = 0.28; <sup>a</sup> = Item is reverse scored.



Table 3

*School Involvement Scale: Items and Reliability*

Items	Corrected Item-total Correlation	Squared Multiple Correlation ( $R^2$ )	Alpha if Item Deleted
This term, I spent time on varsity or junior varsity teams.	0.26	0.16	0.54
This term, I spent time on athletic teams.	0.26	0.15	0.54
This term, I spent time as a cheerleader, a member of the pep club, and/or as a majorette.	0.31	0.11	0.53
This term, I spent time on debate or drama.	0.25	0.10	0.54
This term, I spent time in the band or orchestra.	0.15	0.03	0.57
This term, I spent time in the chorus or a dance group.	0.24	0.11	0.54
This term, I spent time in school clubs.	0.32	0.12	0.52
This term, I spent time on a school publication.	0.25	0.08	0.54
This term, I spent time on student government.	0.32	0.12	0.53
This term, I spent time helping at school.	0.23	0.07	0.55

*Note:* Cronbach's Alpha = 0.57; M = 0.22; SD = 0.18.

Table 4

*Summary of Analyses Predicting Social Integration*

Predictor (coefficient)	Model with Only Level 1 Predictors		Final Model	
	$\beta_j/\gamma_m$ (SE)	<i>p</i>	$\beta_j/\gamma_m$ (SE)	<i>p</i>
Asian American slope ( $\beta_{1j}$ )	0.026 (0.010)	0.01	-	-
Level-2 intercept for Asian Americans ( $\gamma_{10}$ )	-	-	0.061 (0.014)	<0.01
Percentage of Asian Americans at level-2 ( $\gamma_{11}$ )	-	-	-0.005 (0.002)	<0.01
Hispanic slope ( $\beta_{2j}$ )	0.039 (0.006)	<0.01	0.037 (0.006)	<0.01
Black slope ( $\beta_{3j}$ )	0.014 (0.007)	0.06	0.013 (0.007)	0.07
White slope ( $\beta_{4j}$ )	0.063 (0.007)	<0.01	-	-
Level-2 intercept for Whites ( $\gamma_{40}$ )	-	-	-0.005 (0.013)	0.707
Percentage of Whites at level-2 ( $\gamma_{41}$ )	-	-	0.001 (<0.001)	<0.01
American Indian slope ( $\beta_{5j}$ )	-0.026 (0.009)	<0.01	-0.026 (0.009)	<0.01

Table 5

*Variance Components and Percentage of Variance Explained for Social Integration*

Component	Model with Only Level 1 Predictors	Final Model	Percentage of Variance Explained
Within-school Variance ( $\sigma^2$ )	0.52412	0.52404	0.02%
Between-school Variance ( $\tau$ )			
Asian American (for $\beta_{1j}$ )	0.00007	0.00007	0.00%
Hispanic (for $\beta_{2j}$ )	0.00004	-	-
Black (for $\beta_{3j}$ )	0.00003	-	-
White (for $\beta_{4j}$ )	0.00003	0.00003	0.00%
American Indian (for $\beta_{5j}$ )	0.00010	-	-

*Note.* Proportion of  $\sigma^2 = (\sigma^2 \text{ unconditional} - \sigma^2 \text{ final}) / \sigma^2 \text{ unconditional}$ . Proportion of  $\tau$  explained =  $(\tau \text{ unconditional} - \tau \text{ final}) / \tau \text{ unconditional}$ .

Table 6  
*Summary of Analyses Predicting School Participation*

Predictor (coefficient)	Model with Only Level 1 Predictors		Final Model	
	$\beta_j/\gamma_m$ (SE)	<i>P</i>	$\beta_j/\gamma_m$ (SE)	<i>P</i>
Asian American slope ( $\beta_{1j}$ )	0.016 (0.007)	0.03	-	-
Level-2 intercept for Asian Americans ( $\gamma_{10}$ )	-	-	0.035 (0.012)	0.01
Percentage of Asian Americans at level-2 ( $\gamma_{11}$ )	-	-	-0.003 (0.001)	0.02
Hispanic slope ( $\beta_{2j}$ )	-0.025 (0.003)	<0.01	-0.025 (0.003)	<0.01
Black slope ( $\beta_{3j}$ )	0.009 (0.004)	0.03	0.009 (0.004)	0.03
White slope ( $\beta_{4j}$ )	-0.008 (0.005)	0.14	-0.007 (0.005)	0.15

Table 7

*Variance Components and Percentage of Variance Explained for School Participation*

Component	Model with Only Level 1 Predictors	Final Model	Percentage of Variance Explained
Within-school Variance ( $\sigma^2$ )	0.07355	0.07354	0.01%
Between-school Variance ( $\tau$ )			
Asian American (for $\beta_{1j}$ )	0.00064	0.00064	0.00%
Hispanic (for $\beta_{2j}$ )	0.00001	0.00001	-
Black (for $\beta_{3j}$ )	0.00001	0.00001	-
White (for $\beta_{4j}$ )	0.00074	0.00073	-

*Note.* Proportion of  $\sigma^2 = (\sigma^2 \text{ unconditional} - \sigma^2 \text{ final}) / \sigma^2 \text{ unconditional}$ . Proportion of  $\tau \text{ explained} = (\tau \text{ unconditional} - \tau \text{ final}) / \tau \text{ unconditional}$ .

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