# RACIAL-ETHNIC IDENTITY AND ACADEMIC ACHIEVEMENT:

# PSYCHOLOGICAL AND MOTIVATIONAL MEDIATORS

A Dissertation

by

HILLARY MARGARET-JEAN THOMAS

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|---|---|
| Chair of Committee, | Jan Hughes |
| Committee Members, | Jamilia Blake |
| | Anita McCormick |
| | E. Lisako J. McKyer |
| Head of Department, | Victor Willson |

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ABSTRACT

The unfortunate disparity in achievement among minority and low income students is well-documented. Multiple social, structural, and psychological variables have been presented to try to explain the achievement gap. Researchers have also considered an individual's racial-ethnic identity (REI) as an important variable that contributes to achievement outcomes. Oyserman and colleagues developed a model of REI that emphasizes three key factors of one's racial-ethnic identity that have a direct impact on achievement. Further, her model posits that the interaction between two key REI variables, feelings of connectedness to one's REI group (connectedness) and the perception that one's racial-ethnic group values achievement (embedded achievement), contributes to positive achievement outcomes. Although research has suggested that REI significantly impacts achievement, the specific processes by which this occurs are less known. Considering the social-cognitive literature, it is plausible that different psychological and motivational beliefs mediate the relationship between REI and achievement-related outcomes. This dissertation study examines the mediating effect of sense of school belonging and perceived sense of school engagement on the relationship between REI (embedded achievement and connectedness) and academic achievement of minority middle school students longitudinally through the use of structural equation modeling. Results indicate that embedded achievement significantly predicts academic achievement. Furthermore, sense of belonging to school mediates this relationship for all racial and gender groups. Results also revealed that embedded achievement significantly predicted student perceived engagement for Hispanic students. Strategies to promote

sense of belonging and embedded achievement at the personal, structural, community, peer, and family levels are discussed.

# DEDICATION

I would like to dedicate this dissertation study to my loving parents, Richard and Shailendra Thomas. Thank you Daddy and Mommy for instilling in me a love for learning and seeking knowledge. You have always supported my academic interests and educational and career goals and your concern for my education provided me many opportunities. Most importantly I thank you for teaching me the value of having a strong faith and belief in Jesus Christ. Your example of Christ allows me to serve others with the same care and concern that you have modeled for me. I thank the Lord at all times for choosing you as my parents. Your teachings of faith, love, family and service to others will forever be a part of me and help me serve the children and families that I work with daily. I love you both very much and I am grateful and blessed to have you both in my life!

*"Train up a child in the way he should go, and when he is old he will not depart from it." Proverbs 22:6*

I also wish to dedicate my dissertation study to my late grandfather, Richard Allen Thomas. Thank you for your constant support throughout my life. You always encouraged me to study hard and cheered me on every step of the way. Your love and prayers were a blessing in my life. I miss you Granddaddy, and I hope you are having a great time in Heaven!!

*"Grandchildren are the crown of the aged, and the glory of children is their fathers" Proverbs 17:6*

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# INTRODUCTION AND LITERATURE REVIEW

Numerous research studies and national education reports have chronicled the unfortunate disparity in academic achievement among ethnic minority and low income groups in the United States (Lee, 2002; NAEP, 2008; Vanneman, Hamilton, Baldwin Anderson, & Rahman, T., 2009). Specifically, minority and poor students are underperforming academically in comparison to their majority and economically better off student counterparts. The gap in achievement is apparent in many different educational areas, such as student grades, test scores, school dropout rates, and college attainment. One of the most frequently cited discrepancies has been in the difference in students' reading and mathematics skills as measured by standardized test scores. For example, the National Center for Education Statistics has documented trends in the achievement gap of various racial and ethnic groups. Recent reports indicate that in 2007, 4th grade White and Asian/Pacific Islander students scored at or above the proficiency level (competency in an academic area) in reading (46% and 43% respectively). Only 14% of Black students and 17% of Hispanic students scored at this same level (Aud, Fox, & KewalRamani, 2010). In the 2009 mathematics achievement report, 4th grade White and Asian students continued to outperform their Black and Hispanic counterparts. Specifically, only 22% of Hispanic students and 16% of Black students scored at the proficiency level, whereas 60% of Asians and 51% of White students reached this level. A report from 2011, revealed that the achievement gap trend in reading and mathematics continues to persist. Specifically, more White and Asian 4th grade students performed at the proficiency level in mathematics (43% for both groups)

than Black and Hispanic students (16% and 22% respectively) (NCES, 2011). The same trend was found among reading performance. In detail, only 14% of Black 4th grade students and 13% of Hispanic students scored at the proficiency level, whereas 33% of White students and 32% of Asian students reached this level. These statistics reveal that the achievement gap between Asian and White students and their Black and Hispanic counterparts is quite large.

Considering the growing diversity of America's students, it will be essential to identify factors that may be contributing to the achievement disparity. Doing so may help to alleviate the gap in academic performance and further prevent problems associated with underachievement such as high school dropout, drug use, incarceration, and underemployment or unemployment. Presently, many structural, social, and psychological factors have been investigated that affect the prevalence of achievement disparities among ethnic groups. Structural and external factors include, but are not limited to, inadequate school and community resources, parent involvement in students' education, low socioeconomic status, cultural differences in achievement socialization practices, family relationships, school contexts, and stereotype threat (McKown & Strambler, 2008). Social and psychological variables include factors such as school belonging, self-concept, task values, and academic engagement. Individual characteristics such as a students' racial-ethnic identity have also been explored. For example, Ogbu (1998) posited that some ethnic minority students have developed an "oppositional culture" which devalues education to avoid conforming to the "White majority" culture. Although research exists in this area, it is sparse, and mixed results

have been reported. The present research study will attempt to determine the role of racial and ethnic identity in contributing to the observed gap in achievement outcomes among different racial and ethnic student populations. More thorough knowledge of this relationship could help inform educational intervention efforts in hopes of reducing the achievement disparity.

## Racial and Ethnic Identity Defined

The terms racial identity and ethnic identity are often used interchangeably in psychological research and a consensus on their definitions does not exist (Quintana, 1998; Hudley & Irving, 2012). When a distinction is made, racial identity is often described as a socially defined construct that includes one's biological and physical markers, perception of his or her racial group membership, feelings of connectedness to a racial group, attitude toward the racial group, and racial oppression. Ethnic identity is more focused on a distinctive group of people that share common history, culture, religion, language, or place of origin (Quintana, Hudley & Irving). In general, racial identity focuses more on physical appearance, whereas ethnic identity is more related to shared history and cultural norms. In this manuscript, the term racial and ethnic identity (REI) will be used to refer to both racial and ethnic identity.

## Racial and Ethnic Identity Development

Children's cognitive understanding of racial and ethnic identity begins as early as the preschool years and is a process that continues into adulthood (Quintana, 1998). Clark and Clark (1947) is a well-known study on the knowledge of racial differences in early years. The African American subjects of this study were between the ages of three

and seven and most of them could determine the difference between "white" and "colored" dolls. Moreover, over half of the subjects could accurately self-identify with his or her race. Numerous research studies have concluded that racial and ethnic identity development is most influenced by family socialization practices, school and community environments, developmental stage, and peer socialization (Quintana, 1998; Hudley & Irving, 2012). Unfortunately research is limited in comparing the developmental differences in ethnic identity across racial and ethnic groups; however, literature suggests that the REI development and socialization process for minorities is different than those in the majority population. In general racial identity is considered more salient to the identity of minorities than the majority Caucasian population (McDermott & Samson, 2005). There appears to be key differences in the racial identity developmental process between the majority and minority groups. The development of racial identity in the white population has been described as more of a process where individuals abandon their "entitled status," such as ideas of racism, superiority, and suppression of minority groups (Helms, 1995). According to this view, as white people grow in their identity, they strive for more of an attitude of equality and regard for diversity. Oppositely, racial identity development among minority groups is more of a developmental process of racial exploration, acceptance and positive perceptions of one's group, reactions to and acceptance of racism, persevering through racial barriers, and acceleration of racial identity development through facing negative racial encounters (Quintana, 2007; Helms). Moreover, racial socialization within minority families tends to focus more on teaching cultural history (e.g., traditions, pride) and preparation for

discrimination from other groups (Swanson, Cunningham, Youngblood, and Spencer, 2009). Considering the differences in racial and ethnic development and socialization messages, one may speculate that minority children have a more developed sense of racial and ethnic identity than youth in the majority population.

Researchers have created various models to explain the development of racial and ethnic identity in minority and majority populations. These models have been researched with a variety of racial and ethnic groups, ages, and outcomes (e.g., social, academic, psychological). For the purposes of the study, current well-known models of racial and ethnic identity that have been researched with child and adolescent populations will be summarized below.

*Models of Racial and Ethnic Identity Development*

Sellers, Smith, Shelton, Rowley, and Chavous (1998) developed a multidimensional model of racial identity. This model focuses on the status of a person's racial identity at a specific point in time, rather than the "stage" or "process" aspect of one's identity. Using four dimensions of measurement (i.e., racial salience, centrality, regard, and ideology), Sellers's model measures the qualitative meaning (i.e., the value that one ascribes to his or her racial identity) and importance (i.e., the significance of one's race to the self) of being a member of a particular racial group in a specific point in time or context. Sellers's model was originally exclusive to African American populations, but has also been adapted for research with Asian, Caucasian, and Latino adolescent and young adult populations (Fuligni, Witkow, & Garcia, 2005; Yip, 2005; Rivas-Drake, Hughes, & Way, 2008). No value is placed on where individuals fall on

the dimensions; however, research studies have identified that different levels of the dimensions have been related to differences in outcomes. For example, in one study a multiple regression analysis revealed private regard (positive view of African Americans) was positively and significantly related to self-esteem (Rowley, Sellers, Chavous, & Smith, 1998). A similar study using multiple regression analyses found that more private regard was associated with less depression symptoms, less perceived stress, and higher levels of psychological well-being for a group of African American adolescents (Sellers, Copeland-Linner, Martin, & Lewis, 2006). In a longitudinal study, African American students who indicated more racial centrality (race as a central part of one's identity) reported lower levels of psychological distress (Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003).

Phinney's (1989, 1996) stage model of ethnic identity development is widely cited in published literature. Her model posits that minority group members experience four identity statuses (i.e, diffusion, foreclosure, moratorium, and achieved ethnic identity) depending on his or her level of race-related exploration and commitment processes. Phinney's model has been extended to African American, Asian, Caucasian, and Latino adolescent populations. Research studies with Phinney's model have measured the relationship between ethnic identity and various outcomes. For example, using regression, one study found that higher levels of ethnic identity in African American, Caucasian, and Latino adolescents was related to higher self-esteem (Phinney, Cantu, & Kurtz, 1997). Another study found that college students who indicated an achieved ethnic identity had more positive intergroup attitudes (regard for

other ethnic groups) than those who indicated diffused and foreclosed racial identity (Phinney, Jacoby, Silva, 2007). Phinney (1989) found that adolescents whose interview responses were coded into the achieved ethnic identity stage scored higher on psychological adjustment scales and a measure of ego identity than other students who were coded in other identity statuses.

Helms's (1990, 1995) people of color racial identity model is another model that is developmental in nature. Helms's original model theorized that racial identity develops in five stages or statuses. It was later expanded to six statuses. Helms's initial model suggested that a person's progression through the racial identity stages depends on an individual's unique experiences and encounters as a racial group member in the United States. These experiences are thought to encourage investigation of one's racial group and subsequent racial identity development. Her subsequent model placed less emphasis on encounters or conflict with others, but focused more on a natural progression of racial development. Helms also developed a White racial identity model that specifically addresses the racial identity of Caucasian populations. Helm's people of color model has been extended to African American, Asian, Latino, and Native American populations. Research with Helms's people of color racial identity model has found that higher statuses of racial identity were strongly related to positive self-esteem (Alvarez and Helms, 2001). Another study found that racial identity attitudes significantly predicted White and Black client's racial and gender preferences for counselors (Helms & Carter, 1991).

Oyserman, Gant, and Ager (1995) developed a tripartite racial-ethnic identity (REI) model. Oyserman's model posits that three unique factors are included in one's REI. These three factors are Embedded Achievement, Connectedness, and Awareness of Racism. Similar to Sellers model, all three factors work in a dynamic as opposed to an additive manner. Oyserman's model has been researched with diverse adolescent ethnic groups (i.e., African American, Asian, Caucasian, and Hispanic). In general, her model has been researched with various academic outcomes as she has hypothesized that all three components are essential to positive achievement-related outcomes such as high achievement and academic self-efficacy (Oyserman, Harrison, & Bybee, 2001).

The majority of the aforementioned racial and ethnic identity models are limited in their application of studying the relationship between racial and ethnic identity and achievement outcomes. For example, Phinney's and Helms's models have seemingly only been investigated with self-esteem and personal adjustment outcomes. Further, although Sellers has examined the dimensions of his model with academic outcomes, he has employed mainly cross-sectional research designs that provide a poor basis for inferring causal relationships. Furthermore, all data are provided by the adolescent, introducing the possibility of source effects. In contrast, Oyserman's model has been tested using longitudinal designs and multiple sources of data, thus providing stronger evidence that racial-ethnic identity matters academically. The next section will take a closer look at this model and how it may be useful in exploring racial-ethnic identity and achievement.

## REI and Academic Achievement

Oyserman's model proposes that the interaction of the three REI factors will result in successful academic outcomes. These three factors are connectedness (the degree to which one feels a sense of in-group belonging and believes in the group values and ideals), embedded achievement (the belief that one's group values achievement), and awareness of racism (awareness of how one is perceived by persons outside of the identified group). Oyserman's REI model uniquely includes an achievement variable that will be beneficial for analyzing the impact of REI on academic outcomes. Specifically, a person who significantly identifies with a racial group that values achievement is more likely to engage in positive achievement values. Research studies with the model have provided evidence for the nature of these components being influential in positive achievement outcomes. For example, Altschul, Oyserman, and Bybee (2006) found that Latino and African American youth who rated high in both connectedness and embedded achievement, evidenced growth in his or her grade point averages across the eighth to ninth grade school year. Moreover, an interaction effect was detected—the effect of connectedness on GPA was moderated by levels of embedded achievement. Specifically, students who reported high in both connectedness and embedded achievement attained higher GPA's over time. Conversely, students reporting high connectedness but low embedded achievement showed a decline in GPA across two years. This model reveals the limitation of only exploring a student's degree of connectedness to his or her racial group in impacting achievement outcomes. It is also important to consider a student's belief or perception regarding the group's academic

values or ideals. As such, embedded achievement and connectedness work synergistically and it would be disadvantageous to interpret one variable without considering the other. Additionally, the interaction detected in this study also challenges the view of awareness of racism as being highly influential to a student's academic success. It suggests that a person who significantly identifies with a racial group that values achievement is more likely to experience more positive achievement outcomes. As such, awareness of racism did not play a key role in influencing academic success. In fact, there are mixed reviews on the impact that awareness of racism plays in the outcome of one's academic outcomes. Some scholars suggest that awareness of racism may buffer against academic failure (Sanders, 1997), while others have indicated that it hinders academic success (Fordham & Ogbu, 1986).

**Differences in Achievement Outcomes across Gender and Ethnic Groups**

Research with Oyserman's model has demonstrated similarities and differences in academic outcomes across gender and racial-ethnic groups. During a test of construct validity, each factor was structured similarly among eighth grade African American and Latino boys and girls (Oyserman, Brickman, & Rhodes, 2007). In a longitudinal study that measured if the REI factors were predictive of students' grade point average, no significant racial-ethnic or gender moderation effects were detected in the relationship between REI factors and grades (Altschul, Oyserman, Bybee, 2006). However, a significant mean level difference on the REI components was identified between ethnic groups. Specifically, African American students rated higher than Latino students in connectedness, embedded achievement, and awareness of racism over time. Although

between group differences are minimal, other studies have found significant gendered effects within African American students. For example, in a sample of African American adolescents, improved grades were significantly predicted by connectedness for boys, but by embedded achievement for girls (Oyserman, Bybee, and Terry, 2003). In another study, awareness of racism strengthened feelings of self-efficacy for boys, but had a negative influence on feelings of academic self-efficacy for girls (Oyserman, Harrison, Bybee, 2001).

Overall, it appears that the measurement model for the Oyserman measure is invariant across racial-ethnic and gender groups, providing confidence that the measure can be generalized across diverse populations. Research also suggests that the REI scales work similarly in predicting achievement among various racial-ethnic and gender groups. However, mean level differences between ethnic groups for each REI component are likely. Moreover, within group differences appear significant among African American students. Specifically, embedded achievement may be a more salient factor for academic success in girls whereas connectedness may be essential for boys. Further, awareness of racism may be detrimental to the academic success of African American girls.

**Academic Attitudes, Beliefs, and Values that Promote Achievement**

Although Oyserman's model allows for analysis of the effects of racial-ethnic identity (considering both connectedness and embedded achievement) on achievement-related outcomes, research with her model has not identified the processes that account for this effect. Existing literature in this area is sparse, but drawing from social-cognitive

research, one may reason that an individual's racial-ethnic identity may influence achievement through personal beliefs regarding academic achievement. A substantial body of literature demonstrates how specific academic attitudes, beliefs, values, and behaviors promote academic motivation and subsequent achievement related outcomes (Wigfield &Cambria, 2010; Osterman, 2000). In brief, academic motivation is an internal drive and commitment to succeed academically. Numerous motivation theories exist that attempt to clarify what specific internal characteristics and external influences impact motivation (Wigfield & Cambria; Eccles, Wigfield, &Schiefele, 1998). Many research studies reveal that academic motivation variables are strong predictors of positive achievement-related outcomes (Pajares, 2003). Given the strong empirical support of the effect of academic motivation on positive achievement outcomes, specific motivation variables may be the missing link between racial-ethnic identity and academic achievement. The current study will explore two aspects of a student's academic motivation, or academic identity, sense of belonging and engagement in school. Specifically, the study will investigate the mediating role of an individual's perceived sense of school belonging and perceived school engagement in accounting for the effect of racial-ethnic identity on adolescents' achievement. Next, research on the associations between these two aspects of academic identity and academic performance is reviewed.

*Sense of School Belonging*

Goodenow (1993) defines school belonging as a student's perspective of how valuable, respected, encouraged, and included he or she feels in the context of the school

or classroom environment. A high sense of school belonging has a strong relationship with many academic motivation variables. For example, among a group of African American, Caucasian, and Hispanic junior high students, school belongingness was significantly related to student's self-reported expectancy for success, intrinsic value for academics, and general academic motivation and explained a unique amount of variance for each; 19%, 30%, and 21% respectively (Goodenow and Grady, 1993). A similar study found that among a group of junior high students, sense of school membership was significantly related to early adolescents' grade point average for the year (Goodenow, 1993). Although research uses a variety of terms and definitions to describe the construct (Osterman, 2000), it is agreed that a sense of belonging in the school setting fulfills a core psychological need to belong to a community (Anderman, 2002). When that need is met, particularly through positive relationships and a sense of inclusion, importance, and respect at school, students function better academically and experience more positive school-related outcomes. For example, Anderman (2002) found that higher levels of self-reported school belonging was significantly related to lower levels of depression, social rejection and school problems. Further, it was associated with reports of a higher GPA and greater optimism. Similar findings were demonstrated in a study by Singh, Chang, and Dika (2010). These researchers found that among the African American high school students in their sample, perception of school belonging was significantly correlated to self-reported grades, self-concept, and academic engagement (effort and enjoyment of learning). Furthermore, when self-reported grades were regressed on self-reported self-concept, school belonging, and academic engagement, school belonging

was the only variable to make a unique contribution, explaining 14% variance in the student's grades.

*Student Perceived School Engagement*

Similar to a student's sense of school belonging, engagement in school is driven by motivational beliefs and is related to positive school-related outcomes. In fact, research suggests that a student's academic values and expectations predict perceived school engagement and achievement (Eccles, Wigfield, Schiefel, & Damon, 1998) and higher behavioral and emotional engagement during primary grades is predictive of students' gains in academic achievement (Ladd and Dinella, 2009). No single definition of academic engagement exists in the literature, however, most researchers agree that it is a multifaceted construct (Skinner, Kindermann, Connell, & Wellbron, 2009; Fredricks, Blumenfeld, & Paris, 2004; Sciarra, 2008). Specifically, a majority of school engagement research has supported three main types of engagement: behavioral engagement (a student's overt participation in school activities), cognitive engagement (a student's effort, investment, and motivation toward learning) and emotional engagement (a student's negative or positive attitude and emotions regarding all facets of school) (Fredricks, Blumenfeld, & Paris). Each proposed facet of engagement has been related to and predictive of positive achievement related outcomes. For example, a longitudinal study that included an ethnically diverse high school population found that engagement (behavioral, cognitive, and emotional) significantly predicted math achievement scores above prior levels of self and teacher-reported engagement (Sciarra, 2008). Skinner, Furrer, Marchand, & Kindermann (2008), continued the study of

engagement as a multidimensional construct, but focused on three different factors: behavioral engagement, emotional engagement, and disaffection. Disaffection is described as the lack of engagement and the presence of behaviors that represent a maladaptive emotional and motivational state. Specifically, a student may be described as passive, withdrawn, bored, or frustrated (Skinner et al., 2008). Skinner's conceptualization of engagement is unique, as it not only captures a student's level of emotional and behavioral engagement, but it also provides a measure of his or her lack of motivation and degree of disengagement.

**Academic Identity Development and Variations among Racial-Ethnic Groups**

Although a student's academic beliefs, or identity is related to positive achievement outcomes, knowledge of how an individual develops these motivational and psychological constructs can assist in intervention efforts with students who may be experiencing deficits in the aforementioned areas. Similar to racial development, a child's development of values and beliefs is highly influenced by proximal and distal influences such as family, peer relationships, and community. Bio-ecological models of development posit that children exist and develop in many different social contexts that include the home environment, school, and community (Morris & Bronfenbrenner, 2006). Through reciprocal interaction with people in these contexts, children develop ideas, values, attitudes, and beliefs that help them to navigate and function in their worlds (Bronfenbrenner, 1995). The more proximal a context and/or relationship is to a student (e.g. peers or family), the more influential it is expected to be.

Differences among contexts should be expected, especially when considering racial and cultural influences. For example, a child growing up in a Latino household and community may develop different behavioral norms and attitudes than an African American child in a different home and community setting. As such, students of varying racial and ethnic backgrounds may value educational success differently and develop varying perceptions of the importance of academic achievement. Understanding racial and ethnic group differences in support of learning may help to reveal varying academic values among groups and how such differences affect academic outcomes. Historically, literature and news reports have suggested that Hispanic and African American students opposed or undervalued achievement. However, more current literature posits that these minority groups highly value education (Lynn, 2006; Valencia, 2002).

Research studies have suggested that students from different racial and ethnic groups do have varying values and beliefs. Kistner, Metzler, Gatlin, and Risi (1993), found that the characteristics of students preferred by elementary-age classmates changed depending on the racial majority make-up of the classroom. For example, it was found that female students in majority White classrooms evidenced a social preference for girls who were perceived as prosocial and engaged in few externalizing behaviors. In contrast, female students in majority African American classrooms evidenced a social preference for girls who were perceived as prosocial and engaged in few internalizing behaviors. These findings suggest that racial ethnic differences may exist in the valuing of different behaviors. Also consistent with the view that racial and ethnic groups may value achievement differently are findings by Fuller-Rowell and Doan (2010) that

African American middle and high school students' association between self-reported GPA and social acceptance is negative and significantly weaker than their Caucasian peers. The Caucasian students showed a strong and positive relationship between the aforementioned variables. These relationships remained the same when SES and school-level factors were accounted for. The social costs for attaining a higher GPA among the African American students indicated that academic achievement was less valued in comparison to their Caucasian peers.

## Conceptual Model and Study Hypotheses

Although there is evidence that racial-ethnic groups may value academic achievement differently, it is important to remember that not all group members follow group norms or ascribe to group normative beliefs. There is heterogeneity among members in any given racial or ethnic group in the degree to which norms and beliefs are endorsed. Therefore, it is probable that a student's perception of the degree to which he or she is connected to a racial or ethnic group that embraces academic achievement values directly influences his or her academic identity, which in turn predicts achievement-related outcomes.

The key variables examined in this study are racial-ethnic identity, academic identity, academic achievement, and teacher-rated behavioral engagement. In the current study academic identity refers to an individual's perceived effort, emotional and behavioral investment, and belief that he or she is accepted in school. Achievement related outcomes for the current study include each student's performance on a standardized measure of reading and math achievement, as well as teacher-rated

behavioral engagement. Of note, teacher-rated behavioral engagement is considered an achievement-related outcome because it is a proximal antecedent to academic achievement (Skinner, Zimmer-Gembeck, &Connell, 1998) and research has suggested that it predicts changes in student's achievement outcomes (Hughes, Luo, Kwok, & Loyd, 2008). Furthermore, the study tests the conceptual model using a longitudinal design in which the temporal sequence of the causal processes is maintained. That is, the predictor (REI), mediators (perceived school belonging and school engagement), and outcomes (achievement and teacher-rated school engagement) are tested across three years.

Based on the conceptual model depicted in Figure 1, the present study investigates the following hypotheses. Of note, each examined hypothesis controls for baseline levels of mediator variables, outcome variables, cognitive ability, and economic adversity.

*Hypothesis 1:* Students' perceived racial-ethnic connectedness and embedded achievement will significantly predict achievement-related outcomes.

*Hypothesis 2:* Students' perceived racial-ethnic Connectedness and embedded achievement will significantly predict academic identity (i.e., school belonging and engagement).

*Hypothesis 3:* Academic identity will significantly predict achievement–related outcomes.

*Hypothesis 4:* The positive effect of perceived embedded achievement on academic identity will be stronger among youth who report high connectedness. That is, the

interaction between embedded achievement and connectedness will strongly predict academic identity.

*Hypothesis 5:* Academic identity will mediate the relationship between embedded achievement in the context of high connectedness, and achievement-related outcomes.

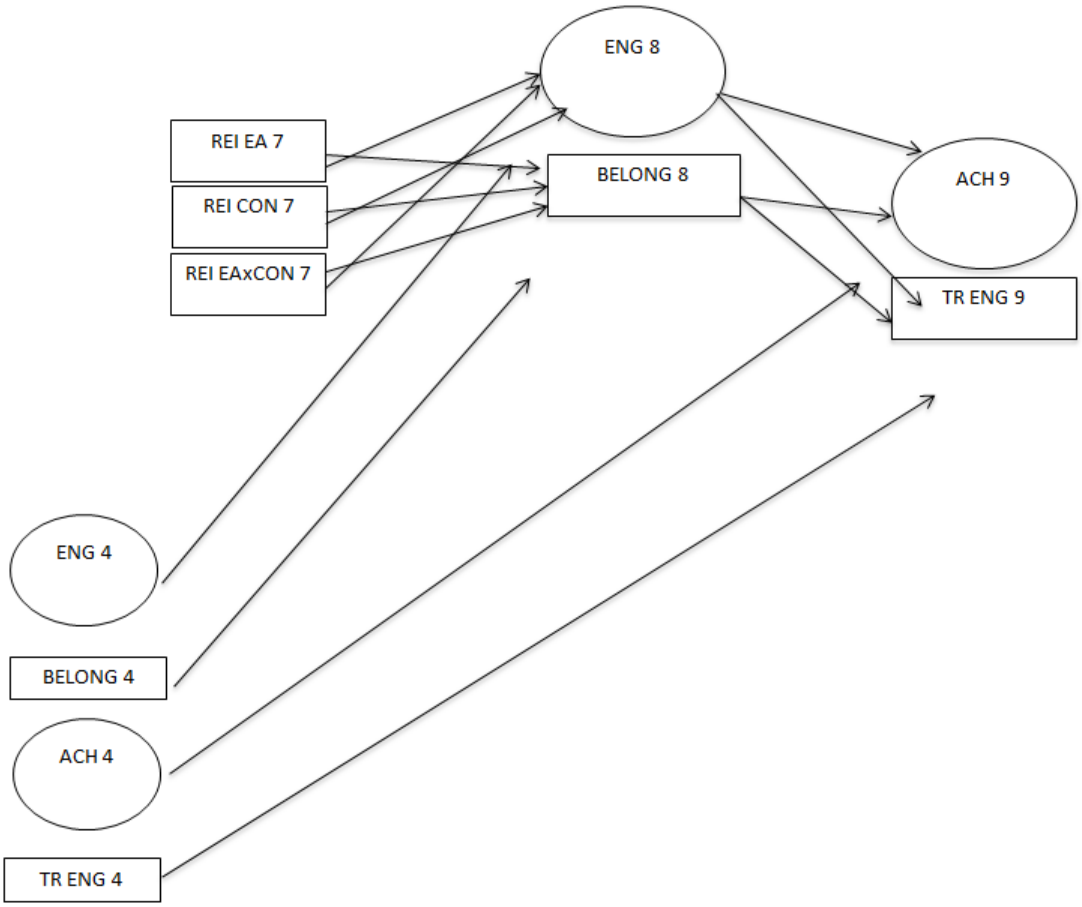


Figure 1. Hypothesized Conceptual Model. ENG= Student Perceived School Engagement; BELONG= Sense of Belonging; ACH= Academic Achievement; REI EA = Embedded Achievement; REI CON= Connectedness; TR ENG= Teacher-Rated Behavioral Engagement

# METHODS

## Participants

Participants are comprised of a subsample of elementary and middle school students who were part of a larger grant funded longitudinal study examining the impact of grade retention on academic achievement. Students in the longitudinal study were recruited from three school districts in southeast and central Texas and data collection began in two cohorts (Fall 2001 and 2002) when participants were in the first grade (Year 1). Students were eligible to participate in the longitudinal study if they scored below their respective school district's median score on a test of literacy skills, spoke either English or Spanish, were not receiving special education services other than speech and language, and had not previously been retained in first grade. As such, the students were considered an academically "At-Risk" sample. A total of 1,374 students were identified as eligible to participate in the study. An exact number of consent forms distributed to students could not be determined, as teachers were responsible for giving them to students. Of those passed out, 1,200 consent forms were returned and 784 (65.3%) provided positive consent. Analyses on variables such as age, sex, ethnicity, eligibility for free or reduced lunch, and performance on the district-administered test of literacy, did not indicate any differences between the 784 students with consent and those without consent.

The current study uses data collected during the 7$^{th}$, 8$^{th}$, and 9$^{th}$ years of the larger longitudinal study. Of the 784 original participants active parent consent was obtained for continuation in the study at Year 5. At that time, 569 provided active consent and a

subsample of those participants (487) met the following criteria for participation in the current study. Specifically, they were: a.) a member of one of three racial groups (African American, Caucasian, or Hispanic), b.) had a measurement of racial/ethnic identity taken at Year 7, and c.) had at least one academic value, achievement outcome variable, or teacher-rated engagement score at Year 4, Year 8, or Year 9. According to attrition analyses, these 487 students did not differ from the 297 students who did not meet inclusion criteria on any demographic variables (i.e. age, gender, IQ, ethnicity, and economic status) or study variables at baseline (Year 1). The amount of missing data on demographic or study variables ranged from 1% to 24%. The overall rate of missingness for the 437 participants was 4.2%. At Year 1, participants' mean score for intelligence as measured with the Universal Nonverbal Intelligence Test (Bracken & McCallum, 1998) was 92.83 (SD=14.5). On the basis of family income, 63.5% of participants were eligible for free or reduced lunch.

Of the 487 participants in the study, 270 (55.4%) were male, and 217 (44.6%) were female. The racial/ethnic composition as provided by each student's school was 26.3% African American, 34.7% Caucasian, and 39.0% Hispanic. Of note, when racial/ethnic identity was student reported the statistics changed slightly: 25.1% African American, 34.1% Caucasian, 39.6% Hispanic, and 1.2% other. School reported racial/ethnic composition was used in the overall analyses. Student-rated racial/ethnic composition measured at Year 7 was used in multi-group analyses. At Year 7, students were in the $5^{th}$ (1.8%), $6^{th}$ (31.6%), and $7^{th}$ (66.5%) grades. The mean age at Year 7 was 12.6 (SD=.37).

## Design Overview

During each year of the larger longitudinal study, data were collected from teachers through the use of questionnaires and students through structured psychological interviewing and standardized achievement testing. Teachers administered questionnaires during the spring semester of each school year and received a monetary compensation for the completion of measures. Research staff individually administered standardized tests as well as interviewed student participants throughout each academic year. If a student or their parent was identified as a Spanish speaker, they were administered the Woodcock-Munoz Language Scale (WMLS; Woodcock & Munoz-Sandoval, 1993) to determine their language proficiency in English and Spanish. Students were administered measurements in the language where they display greater language proficiency.

## Measures

*Racial-Ethnic Identity*

Racial-ethnic identity was measured through administration of the personality assessment given to all student participants during the data collection phase. The specific measurement is derived from a model presented by Oyserman, Grant and Ager (1995). The model is composed of three aspects of racial-ethnic identity: a.) how closely one feels that he or she belongs to the racial group (Connectedness), b.) feeling that one's group is characterized by academic attainment and values academic achievement (Embedded Achievement), and c.) the degree of awareness that others discriminate against one's particular racial group (Awareness of Racism). Participants were first

asked to identify which racial or ethnic group best described them. Next, participants responded to a 12-item questionnaire that yielded the three composite scores representative of each racial-ethnic identity domain identified by Oyserman and colleagues. Each item score was based on a 5-point likert-type scale, with scores ranging from 1 (strongly disagree) to 5 (strongly agree). Each item was read aloud by the interviewer with the student's self-reported race or ethnic group entered into the question prompts. Example items are, "It is important to me to think of myself as a(n) race/ethnicity" (Connectedness); "It is important for my family and the race/ethnicity community that I succeed in school" (Embedded Achievement); and "Some people will treat me differently because I am race/ethnicity" (Awareness of Racism). Confirmatory factor analysis on the combined Year 7 data, was used to examine the three-factor structure of the model proposed by Oyserman and colleagues. The fit of the three-factor model supported the construct validity of the scale, $\chi^2(51) = 124.59$, $p < .001$, (SRMR = 0.067, RMSEA = 0.054, CFI = 0.958). In the current study sample, for students at Year 7, internal consistencies were .786 (embedded achievement), .770 (connectedness), and .666 (awareness of racism). Reliability is similar to that found in previous studies with the same measures: .62 – .74 (Oyserman et al., 2001), .71 – .79 (Fast Track, www.fasttrackproject.org/techrept/e/eio/eio9tech.pdf), and .58 – .74 (Oyserman, Bybee, et al., 2003); as cited in Altschul, Oyserman, Bybee (2006).

*Academic Achievement*

The Woodcock-Johnson Tests of Achievement, Third Edition (WJ-III ACH; Woodcock, McGrew, & Mather, 2001) was used as a standardized measure of math and

reading achievement. The WJ-IIIACH is a commonly used, norm-referenced, individually administered achievement measure for individuals ages two to adulthood. Broad reading scores (Letter-Word Identification, Reading Fluency, and Passage Comprehension subtests) and Broad Math (Calculation, Math Fluency, and Applied Problems subtests) were used for reading and math achievement. Specifically, a latent achievement construct was created with WJ-III broad reading and WJ-III broad math as the indicators. Numerous studies have supported the reliability and construct validity of the WJ-III ACH Woodcock et al., 2001). Analyses were conducted with the Rasch-based "W" scores, which are especially well suited to assessing change in achievement. Students who demonstrated a higher language proficiency in Spanish were administered the Bateria III (Bateria III; Munoz-Sandoval, Woodcock, McGrew, & Mather, 2005), which yields W scores for reading and math achievement that are comparable to those of the WJ-III ACH.

*Student Perceived School Engagement*

Student perceived school engagement was also measured via the personality assessment through a student-report 18-item scale adapted from Skinner et al. (1998). This measurement examines different dimensions of student engagement. An exploratory factor analysis on a randomly selected sample of half of the fourth-grade student participants from the larger longitudinal study suggested three factors. Based on Skinner, Furrer, Marchand, and Kindermann (2008), the factors were labeled Behavioral Engagement (7 items), Emotional Engagement (4 items), and Behavioral Disaffection (6 items); one item was dropped due to low loading on all three factors. Results of

confirmatory factor analysis on the other half of the fourth grade participants from the larger study revealed that the three-factor model provided an adequate fit for the data, $\chi 2(112) = 189.402$, $p < .001$, SRMR=.061, RMSEA =.047, CFI =.924. Each item score was based on a 5-point likert-type scale and mean item scores were calculated for each scale. Example Behavioral Engagement scale items include "When I am in class, I work as hard as I can" and "I try to learn as much as I can about my school subjects." Example Emotional Engagement scale items include "When I am in class, I feel angry" (reversed scored) and "When I am in class, I feel happy." Example Behavioral Disaffection scale items include "When I am in class, I just act like I am working" and "When I am in class, I just try to look busy." In the current sample, for students at Year 8, the internal consistencies were .822 (Behavioral Engagement), .564 (Emotional Engagement), and .804 (Disaffected Engagement). For the current study, a latent student-rated perceived school engagement factor was created with Behavioral Engagement, Emotional Engagement, and Disaffected Engagement as the indicators.

*Psychological Sense of School Membership*

As part of the personality interview, students were administered the Psychological Sense of School Membership Scale (PSSM; Goodenow, 1993) as a measure of perceived sense of school belonging. The PSSM is an 18-item questionnaire that measured each student's perceived acceptance, feelings of inclusion, respect, and encouragement in school life. Students indicated the degree to which agree or disagree with each item statement on a 5-point likert-type scale, with scores ranging from 1 (not at all true) to 5 (very true). Sample items include, "People here notice when I am good at

something"; "I can really be myself at this school"; "The teachers here respect me"; and "It is hard for people like me to be accepted here" (reverse scored). Studies by Goodenow (1992, 1993) found internal consistency for the PSSM ranging from .71 to .88 for middle school-age students. Hagborg (1994) reported an internal consistency value of .88 for both middle and high school student samples. Also, with a sample of 50 eighth graders, he found a test–retest reliability value of .78 at a four week internal. Internal consistency, for the current sample at Year 9 is .893.

*Teacher-Rated Behavioral Engagement*

Teachers were asked to rate student's classroom engagement with an 18-item questionnaire during the spring semester of each year. Items were adapted from both the teacher and student ratings of engagement (Skinner et al., 1998). All items were reconstructed to be from the teacher's perspective and teachers were asked to rate the extent to which each statement was true of their student using a 4-point likert-type scale, ranging from 1 (not at all true) to 4 (very true). Of these 18 items, 10 assess behavioral engagement (e.g., tries hard to do well in school), 4 assess interest (e.g., pays attention to things that interest him/her), and 4 assess emotional engagement (e.g, feels happy). Through a series of exploratory factor analyses with a sample from the larger longitudinal study (Year 3), a behavioral engagement factor was supported by 11 items that measure effort, persistence, concentration, and interest. Based on these results, the teacher-rated behavioral engagement score was calculated as the mean item score on 11 items that loaded on the behavioral engagement factor that is used in the current study. In the current sample, the internal consistency for this factor at Year 9 is .91.

## Child IQ, Economic Adversity, and Year 4 Baseline Scores

Information about students' IQ, familial economic adversity, and Year 4 baseline scores were collected as factors that might be associated with other variables in the study. Each measure is described below.

*Cognitive Ability (IQ)*

At Year 1, students were individually tested at school with the Universal Nonverbal Intelligence Test (UNIT; Bracken & McCallum, 1998). The UNIT is a standardized nonverbal assessment of general intelligence and cognitive domains of children and adolescents. The UNIT assesses general intelligence by measuring complex memory and reasoning abilities using culturally and linguistically universal hand and body gestures rather than receptive or expressive language. Students were assessed using the abbreviated version of the UNIT that yields a full scale IQ which is highly correlated with the scores obtained with the full battery (r=.91). The UNIT has demonstrated good test-retest reliability and internal consistency reliabilities, as well as construct validity (Hooper & Bell, 2006; Bracken & McCallum, 1998).

*Economic Adversity*

Children's eligibility for free or reduced lunch at 1st grade was used as an indicator of children's economic adversity (0 = not eligible, 1 = eligible). Information on eligibility was provided by school records and based on children's family income.

*Baseline Score Measures*

Year 4 baseline scores for reading and math achievement, student-rated perceived school engagement, PSSM, and teacher-rated behavioral engagement were obtained by using the same measure as those used for Year 7, Year 8, and Year 9.

# RESULTS

Descriptive and correlational analyses are reported first to describe patterns of observed and latent study variables. Next, the results of the tests of the hypothesized models are reported. Refer to Figure 1 for depiction of the full hypothesized model. Last, the results of the tests for racial-ethnic group moderation and gender moderation on the hypothesized models are reported.

## Descriptive Statistics

Descriptive statistics were conducted, and the means and standard deviations for the observed variables in the hypothesized model are presented in Table 1. The variables were screened for normality and outliers. The analysis variables did not have values that exceeded the recommended cutoff values of two for skewness and seven for kurtosis (West, Finch, & Curran, 1995).

## Correlational Analyses

The zero order correlations of observed study variables and covariates are shown in Tables 1 and 2. First, the stability of the outcome and mediator variables was observed. Math and reading achievement from Year 4 to Year 9 was strongly stable, r=.74 and r=.80, respectively. Teacher-rated behavioral engagement was moderately stable from Year 4 to Year 9 (r=.33). Student-rated perceived engagement factors were mildly stable from Year 4 to Year 8; Behavioral Engagement (r=.28); Emotional Engagement (r=.18); and Disaffection (r=.19). PSSM belonging was also mildly stable from Year 4 to Year 8 (r=.23). The low cross year stability for the engagement factors

Table 1
Correlations, Means, and Standard Deviations of Analysis Variables and Year 1 Covariates.

| Variable | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. IQ1 | 1.00 | | | | | | | | | | |
| 2. ECON1 | -.151** | 1.00 | | | | | | | | | |
| 3. REI EA7 | -.115* | .256** | 1.00 | | | | | | | | |
| 4. REI CON7 | -.044 | .253** | .665** | 1.00 | | | | | | | |
| 5. BELONG8 | .002 | .070 | .300** | .254** | 1.00 | | | | | | |
| 6. SR ENG Beh8 | -.107* | .038 | .255** | .220** | .547** | 1.00 | | | | | |
| 7. SR ENG Emo8 | .003 | .016 | .125** | .157** | .614** | .388** | 1.00 | | | | |
| 8. SR ENG Dis8 | -.013 | -.031 | .119** | .065 | .412** | .565** | .426** | 1.00 | | | |
| 9. Read ACH9 | .319** | -.320** | -.101* | -.118* | .133** | -.005 | .150** | .037 | 1.00 | | |
| 10. Math ACH9 | .292** | -.315** | -.033 | -.110* | .167** | .047 | .174** | .119* | .666** | 1.00 | |
| 11. TR ENG9 | .082 | -.215** | -.007 | -.007 | .125* | .19* | .029 | .110* | .168** | .190** | 1.00 |
| *M* | 92.83 | .64 | 3.86 | 4.01 | 3.87 | 3.15 | 3.35 | 3.00 | 528.82 | 519.81 | 2.72 |
| *SD* | 14.50 | .48 | .84 | .75 | .67 | .53 | .51 | .63 | 24.61 | 12.47 | .66 |

Note: N= 487. IQ= Intellectual Ability; ECON=Economic Status; REI EA= Embedded Achievement; REI CON= Connectedness; BELONG= Self-Reported Sense of School Belongingness; SR ENG Beh= Self-Reported Behavioral Engagement; SR ENG Emo= Self-Reported Emotional Engagement; SR ENG Dis= Self-Reported Disaffection Engagement; Read ACH= Reading Achievement; Math ACH= Math Achievement; TR ENG= Teacher-Rated Behavioral Engagement.
** p<.01 (two-tailed). *p <.05 (two-tailed).

Table 2
Correlations, Means, and Standard Deviations of Analysis Variables and Year 1 and Year 4 Covariates.

| Variable | 12. | 13. | 14. | 15. | 16. | 17. | 18. |
|---|---|---|---|---|---|---|---|
| 1. IQ1 | -.037 | -.017 | .045 | .075 | .318** | .333** | .158** |
| 2. ECON1 | .086 | .133** | -.076 | -.090 | -.230** | -.271** | -.116* |
| 3. REI EA7 | .133** | .147** | .025 | -.025 | -.084 | -.082 | .001 |
| 4. REI CON7 | .164** | .165** | .078 | .004 | -.026 | -.089 | .001 |
| 5. BELONG8 | .234** | .240** | .093* | .109* | .085 | .059 | .097 |
| 6. SR ENG Beh8 | .247** | .281** | .137** | .086 | .005 | -.025 | .127* |
| 7. SR ENG Emo8 | .173** | .195** | .181** | .193** | .136** | .133** | .128* |
| 8.SR ENG Dis8 | .183** | .128** | .145** | .187** | .008 | .000 | .094 |
| 9. Read ACH9 | .028 | -.008 | .064 | .177** | .798** | .613** | .330** |
| 10. Math ACH9 | .047 | .029 | .131** | .167** | .560** | .736** | .410** |
| 11. TR ENG9 | .089 | .097 | .111* | .140** | .139** | .115* | .331** |
| 12. BELONG4 | 1.00 | | | | | | |
| 13. SR ENG Beh4 | .365** | 1.00 | | | | | |
| 14. SR ENG Emo4 | .466** | .173** | 1.00 | | | | |
| 15. SR ENG Dis4 | .275** | .260** | .462** | 1.00 | | | |
| 16. Read ACH4 | .036 | -.024 | .088 | .099* | 1.00 | | |
| 17. Math ACH T4 | .062 | .007 | .143** | .209** | .615** | 1.00 | |
| 18. TR ENG T4 | .216** | .188** | .213** | .226** | .253** | .298** | 1.00 |
| *M* | 3.88 | 3.48 | 3.15 | 3.21 | 487.69 | 496.12 | 2.80 |
| *SD* | .65 | .43 | .66 | .68 | 19.23 | 10.79 | .67 |

Note: N= 487. IQ= Intellectual Ability; ECON=Economic Status; REI EA= Embedded Achievement; REI CON= Connectedness; BELONG= Self-Reported Sense of School Belongingness; SR ENG Beh= Self-Reported Behavioral Engagement; SR ENG Emo= Self-Reported Emotional Engagement; SR ENG Dis= Self-Reported Disaffection Engagement; Read ACH= Reading Achievement; Math ACH= Math Achievement; TR ENG= Teacher-Rated Engagement.
** p<.01 (two-tailed). *p <.05 (two-tailed).

and sense of belonging may reflect the length of time between assessments as well as the students' transition from elementary school to middle school.

Next, the relationships between predictor, mediator, and outcome observed variables were observed. As expected, predictor variables embedded achievement and connectedness were strongly and positively correlated (r=.67). Embedded achievement was positively and significantly related to sense of belonging and each student-rated perceived school engagement factor (behavioral, emotional, and disaffection). Connectedness was positively and significantly related to sense of belonging, and behavioral and emotional engagement. Its non-significant relationship with disaffection could indicate that connectedness to a racial-ethnic group does not directly affect how disengaged a student is in the classroom. Sense of belonging was positively and significantly related to math and reading achievement and teacher-rated behavioral engagement. Emotional engagement was positively and significantly related to math and reading achievement. It was not significantly related to teacher-rated behavioral engagement. Disaffection was positively and significantly related to math achievement and teacher-rated engagement. As would be expected, student-rated behavioral engagement was significantly related to teacher-rated behavioral engagement.

The relationships between Year 1 covariate variables (economic status and cognitive ability) and the mediator and outcome variables were also examined. Results are shown in Table 2. Cognitive ability was negatively and significantly associated with economic status (Year 1), embedded achievement (Year 7), and student-rated behavioral engagement (Year 8). This implies that students with lower cognitive ability felt that

their ethnic group valued achievement less and were less actively engaged in school. Cognitive ability was positively and significantly associated with math achievement (Years 4 and 8), reading achievement (Years 4 and 8) and teacher-rated engagement (Year 4). Economic status was negatively and significantly associated with math achievement, reading achievement, and teacher-rated engagement at Years 4 and 9. This finding suggests that students with a lower economic status experienced lower reading and math achievement and were perceived as less engaged by their teachers. Economic status was positively and significantly associated with embedded achievement and connectedness (Year 7), and student-rated behavioral engagement (Year 4). This finding suggests that students with a higher economic status felt a higher sense of embedded achievement and connectedness with their ethnic group. This also suggests that when students were in elementary school, those who had a higher economic status were more actively engaged in school.

## Measurement Model

The measurement models of each latent factor were tested separately for Years 4 and 8 of the study. For each measurement model it was expected that the three student-rated perceived school engagement scales (behavioral, emotional, disaffection) would load on the engagement factor. In addition, it was expected that the WJ-III ACH reading and math scores would load on the achievement factor. The bivariate correlations (Table 1) were consistent with these models. The measurement model had adequate fit at Year 8 of the study, $\chi^2(5)=13.\ 623$, CFI= .985, RMSEA= .060, SRMR= .038. All loadings were adequate ranging from .55 to 1.00 (Crocker & Algina, 1986). The fit statistics for the

Year 4 measurement model were also adequate, $\chi^2(5)=3.808$, CFI= 1.00, RMSEA= .000, SRMR= .022.

**Structural Equation Model (Tests of Hypothesized Models)**

The hypothesized structural models were assessed using MPLUS version 6.12 (Muthen & Muthen, 1998-2011). Figure 1 presents the hypothesized model. In the current version of MPLUS, Full Information Maximum Likelihood (FIML) for missing data is a default. Model fit was examined using the chi-square test and fit indices (CFI, RMSEA, and SRMR), as well as modifications to improve model fit as they were supported by theory.

Next, the direct effect of predictor variables (embedded achievement, connectedness, and the interaction term) on each outcome variable (academic achievement and teacher-rated engagement) was measured. Analyses indicated that the interaction term representing connectedness by embedded achievement did not significantly predict achievement; accordingly, this interaction term was dropped from future analyses. The direct effect of embedded achievement on academic achievement was positive and significant ($\beta_{standardized}$ =0.109, $p$=.004). The direct effect of connectedness on academic achievement was negative and significant $\beta_{standardized}$ = -0.136, $p$=.001). The analysis of the direct effect of embedded achievement, connectedness, and the interaction term representing the interaction of these two measures on teacher-rated behavioral engagement revealed that none of these variables significantly predicted teacher-rated engagement. Consequently, this outcome variable was removed from the tests of mediation.

*Student-Rated Perceived School Engagement as a Mediator*

The first model tested included academic achievement as an outcome, and student-rated perceived school engagement as a mediator. There were two targeted mediation pathways: Year 7 embedded achievement and connectedness scales were hypothesized to effect Year 8 student-rated perceived school engagement, which, in turn, was expected to influence Year 9 achievement; Year 8 student-rated perceived school engagement was hypothesized to mediate the effects of Year 7 embedded achievement and connectedness Year on achievement at Year 9. All these effects controlled for the corresponding Year 4 scores as well as Year 1 cognitive ability and economic status baseline scores. The hypothesized model was tested and the fit statistics were adequate, $\chi^2$ (60)=159.581 , CFI=.946, RMSEA= .058, SRMR= .063. Before the tests of mediation, the direct effects of the REI variables on academic achievement were observed. In this model, embedded achievement had a positive and significant direct effect on academic achievement ($\beta_{standardized}$ =0.111, $p$=.004). Connectedness had a negative and significant direct effect on achievement ($\beta_{standardized}$ = -0.139, $p$=.000) As shown in Figure 2, the hypothesized path from Year 7 embedded achievement to Year 8 student-rated perceived school engagement reached significance ($\beta_{standardized}$ =0.200, $p$=. 003) , although the path from Year 7 connectedness to engagement at Year 8 was not significant ($\beta_{standardized}$ =0.053, $p$=.439). The path from Year 8 student-rated perceived school engagement to Year 9 achievement approached significance ($\beta_{standardized}$ =0.062, $p$=.08). Contrary to study hypothesis, the indirect effects of Year 7 embedded achievement and connectedness on Year 9 achievement, through Year 8 student-rated perceived

engagement, were not significant ($\beta$'s $_{standardized}$ = 0.012 and 0.003, *ps*= .128 and .478 respectively, for embedded achievement and connectedness).

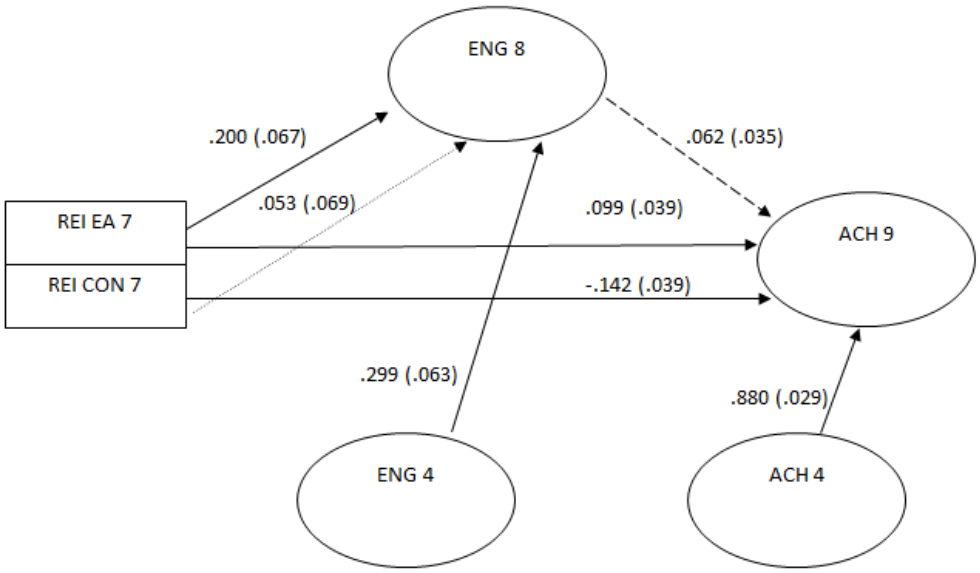


Figure 2. Perceived School Engagement Mediation Model. All paths are standardized. Standard errors are shown in parentheses. All coefficients are significant (p<.05), except dashed paths (p<.10), and dotted paths (p>.10).

*Sense of School Belonging as a Mediator*

The next hypothesized model, with belongingness as the mediator, was tested. Year 7 embedded achievement and connectedness were hypothesized to effect Year 8 student-rated sense of belonging; Year 8 student-rated sense of belonging , was expected to influence Year 9 academic achievement; Year 8 student-rated sense of belonging was hypothesized to mediate the effects of Year 7 embedded achievement and connectedness on academic achievement at Year 9. All these effects controlled for the corresponding

Year 4 scores as well as Year 1 IQ and economic status baseline scores. The hypothesized model fit the data adequately, $\chi^2$ (22) =63.686, CFI= .968, RMSEA= .063, SRMR= .066. Before the tests of mediation, the direct effects of the REI variables on academic achievement were observed. In this model, embedded achievement had a positive and significant direct effect on academic achievement ( $\beta_{standardized}$ =0.114, *p*=.004). Connectedness had a negative and significant direct effect on achievement ( $\beta_{standardized}$ = -0.139, *p*=.001) As shown in Figure 3, the hypothesized path from Year 7 embedded achievement to Year 8 sense of belonging reached significance ( $\beta_{standardized}$ =0.229, *p*=. 000), although the path from Year 7 connectedness to Year 8 sense of belonging Year was not significant ( $\beta_{standardized}$ =0.080, *p*=. 176). Further, the path from Year 8 sense of belonging to Year 9 academic achievement reached significance ( $\beta_{standardized}$ =0.097, *p*=. 002). Consistent with study hypothesis, the indirect effect of Year 7 embedded achievement to Year 9 academic achievement was significant ( $\beta_{standardized}$ =0.022, *p*=. 016). Although reduced, the direct effect of Year 7 embedded achievement on Year 9 academic achievement remained significant ( $\beta_{standardized}$ =0.022, *p*=. 016), indicating partial mediation. Conversely, the indirect effect of Year 7 connectedness upon Year 9 academic achievement was not significant ( $\beta_{standardized}$ =0.008, *p*=. 217). As expected, sense of belonging partially mediated the relationship between embedded achievement and academic achievement; however, sense of belonging did not

significantly mediate the relationship between connectedness and academic achievement.

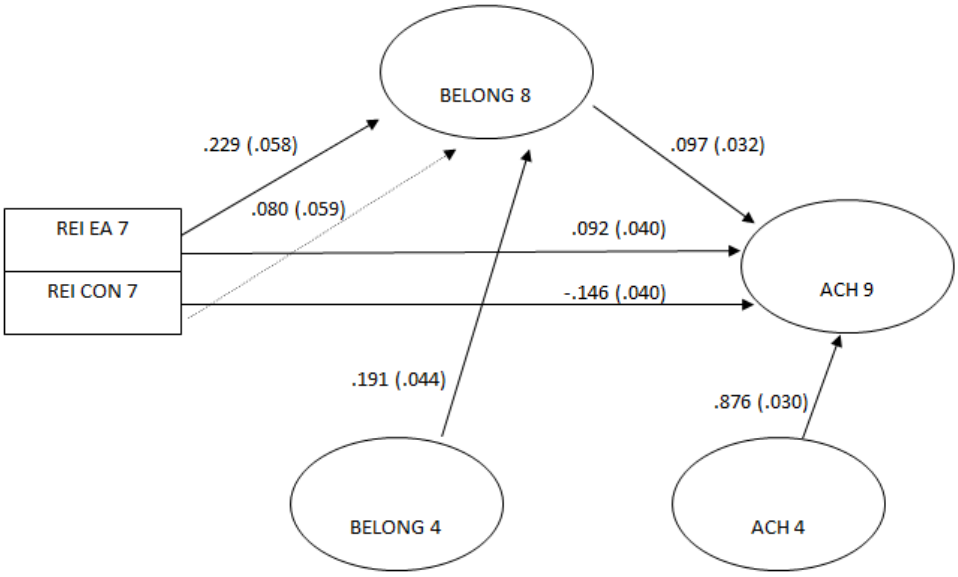


Figure 3. Sense of Belonging Mediation Model. All paths are standardized. Standard errors are shown in parentheses. All coefficients are significant ($p<.05$), except dashed paths ($p<.10$), and dotted paths ($p>.10$).

## Tests of Moderation

The potential moderation effect of racial-ethnic group and gender on the hypothesized paths was examined using multi-group analysis. To determine if racial-ethnic group and gender differences exist in the hypothesized models, multi-group analysis compares a fully constrained model, where structural paths are equal for all racial-ethnic groups, to an unconstrained model where structural paths for the groups are fee to vary. If there is no significant difference between the constrained and

unconstrained models then one assumes that no ethnic group differences exist. Analyses with student-rated perceived school engagement and sense of belonging as mediators were conducted separately.

*Student Perceived School Engagement as a Moderator*

To test for racial-ethnic moderation of the hypothesized student perceived school engagement mediation model, the structural paths were constrained to be equal across African American, Hispanic, and Caucasian students. The constrained and unconstrained models revealed adequate fit $\chi^2$ (198)=287.565, CFI= .947, RMSEA= .053, SRMR= .107 and $\chi^2$(192)=270.583, CFI= .953., RMSEA= .051, SRMR= .102, respectively. The chi-square difference test between the fully constrained and unconstrained model reached statistical significance, ($\chi^2_{diff}(6) = 16.982$, $p < .009$), indicating that the model fits differently between racial-ethnic groups.

When the structural paths were examined individually, the path from Year 7 embedded achievement to Year 8 perceived school engagement differed significantly between racial-ethnic groups, ($\chi^2_{diff}(2) = 7.2$, $p = .027$). Specifically, this path was significantly different between African American and Hispanic students ($\chi^2_{diff}(1) = 5.748$, $p = .017$) and between Hispanic and White students ($\chi^2_{diff}(1) = 4.65$, $p = .031$). For Hispanic students, the path from Year 7 embedded achievement to Year 8 perceived school engagement was significant ($\beta_{standardized} = 0.343$, $p = .000$). This path was not significant in the African American or White models. The path from Year 8 perceived school engagement to Year 9 academic achievement approached significance between

racial-ethnic groups ($\chi^2_{diff}(2) = 5.495$, $p = .064$). Of note, this path was significant only for African American students.

*Sense of School Belonging as a Moderator*

To test for racial-ethnic moderation of the hypothesized sense of belonging mediation model, the structural paths were constrained to be equal across African American, Hispanic, and Caucasian students. The constrained and unconstrained models revealed adequate fit, however, the difference in model fit between the two models did not reach statistical significance, ($\chi^2_{diff}(6) = 9.167$, $p = .164$), indicating that the model fit similarly across racial-ethnic groups.

*Gender Moderation Model*

To test for gender moderation of both the hypothesized perceived school engagement and sense of belonging mediation models, the structural paths were constrained to be equal for boys and girls in each model. The chi-square difference test between the constrained and unconstrained models was not significant, ($\chi^2_{diff}(3) = 6.008$, $p = .111$). This indicates that the perceived school engagement model and the sense of belonging model fit similarly for boys and girls.

# DISCUSSION AND CONCLUSIONS

The disparity of academic achievement among specific racial and ethnic groups has encouraged researchers to determine the role of racial-ethnic identity on academic-related outcomes. The relationship between REI and achievement has been well-documented; however, the content of REI that influences achievement, as well as the specific processes by which the relationship between racial-ethnic identity and academic achievement occurs is less known. Research findings by Oyserman and colleagues have shed some light on the content of racial-ethnic identity that impacts academic achievement. Specifically, her research suggests that a student that feels highly connected to a racial-ethnic group that he or she perceives values achievement, is more likely to experience positive academic achievement outcomes. However, there still appears to be a gap in the research that explains why this relationship occurs. The purpose of the current study was to explore academic-related beliefs and attitudes, such as student perceived school motivation and sense of belonging, as potential mediators of the racial-ethnic identity and academic achievement relationship. The sample included students who were transitioning from middle school into high school, a developmental period where students are fostering individual self-identities that are highly influenced by racial-ethnic identity. During this period, it is well documented that a student's academic motivation declines, especially for minority students (Eccles & Midgley, 1990), however, students who embrace certain academic values experience better achievement outcomes. The current study extended upon the work that examines racial-ethnic identity and achievement. Specifically, it is the first to examine the processes that

mediate the racial-ethnic identity and academic achievement relationship. Although the current study did not support the interaction between embedded achievement and connectedness as predictive of academic achievement, several other important hypotheses were supported by the research findings. Next we discuss these research findings.

## REI and Achievement Related Outcomes

The interaction between embedded achievement and connectedness did not significantly predict academic achievement or teacher-reported behavioral engagement. This was unexpected given the prior research that supported this interaction. Connectedness was found to negatively predict academic achievement but not teacher-rated engagement. This finding may indicate that feeling included in a racial or ethnic group, alone, is not meaningful enough to influence motivation for school. A measurement of the actual degree to which one actually interacts with one's racial or ethnic group may have interacted better with one's perception of the achievement values of one's racial or ethnic group.

Embedded achievement positively and significantly predicted academic achievement. As expected, if one perceives that his or her group values achievement, he or she is more likely to embrace those achievement norms and subsequently have positive achievement outcomes. Conversely, embedded achievement did not significantly predict teacher-rated behavioral engagement. It is possible that other factors such as teacher bias of minority student behaviors or the quality of the teacher-student relationship could diminish a teacher's perception of how engaged a student is in the

classroom. Research suggests a relationship between engagement and teacher-student relationships (Furrer & Skinner, 2003). For example, Hughes and Kwok (2007) found that student-teacher and parent-teacher relationships were predictive of teacher-rated engagement, which was predictive of achievement. It could also be the case that middle school students have multiple teachers and a single measurement of their behavioral engagement may not be the best determinant of their overall commitment in school. Especially if one takes into account contextual factors such as teacher demands, classroom expectations, and the student's interest in the subject matter.

**The Role of Student Perceived School Engagement in Achievement Outcomes**

In this study student perceived school engagement did not mediate the relationship between embedded achievement and academic achievement. Nevertheless, the path between embedded achievement and student perceived school engagement was significant for the entire group. The path between student perceived school engagement and achievement only approached significance. Further analyses revealed that the hypothesized model fit differently between the racial-ethnic groups. Specifically, the path between embedded achievement and engagement was only significant for Hispanic students and this was significantly different from African American and Caucasian students. This suggests that for Hispanic students, feeling that their group values achievement will significantly impact their engagement in the school setting. This finding is not surprising given the collectivistic culture of Hispanic populations. More specifically, an important cultural value among Hispanics is *familism*- where the primary objective for family members is the overall prosperity of the family. Specifically,

members adopt cultural, behavioral, and structural norms that are supportive of the well-being of the family (Valenzuela & Dornbusch, 1994). As such, if a student's academic success is valued by the family and is seen as beneficial to the family, he or she is more likely to value school, and have a positive perception of school engagement. A study with high school Latino students revealed that through linear regression analyses, higher attitudinal familism predicted lower truancy and more academic effort (Esparza & Sanchez, 2008). Therefore, the more Hispanic students perceive achievement as important to their cultural group, the more likely they are to be engaged academically.

**The Role of School Belonging in Achievement Outcomes**

Sense of school belonging mediated the relationship between embedded achievement and academic achievement. This model was not significantly different between racial-ethnic groups. This finding suggests that if a student perceives achievement as important, feeling valued and respected in the school setting will promote academic success. Therefore, it is imperative that teachers and staff who work to find ways to bolster students' sense of belonging. The literature notes that a student's sense of belonging is highly influenced by the school context (Goodenow, 1993; Anderman, 2002). Therefore, developing school-wide and classroom curriculum that helps develop a sense of belonging would be beneficial in fostering student's motivation to succeed academically. Research also suggests that psychological interventions may be beneficial in developing a stronger sense of belonging (Yeager, Walton, & Cohen, 2013). Findings from the current study also revealed that embedded achievement significantly predicts a sense of belonging. This suggests that one way to boost school

belonging will be to instill in students a positive sense of embedded achievement. This may be done through intervening with the most proximal contextual systems, a student's family, school environment, and community.

## Gender Moderation

The study found evidence that the engagement and belongingness model pathways were equivalent for boys and girls. As was discussed in the literature review, gendered effects may be more salient within racial-ethnic groups as opposed to between groups.

## Practical Implications

Various researchers have noted that race is not malleable, therefore it is important to identify other student-related factors that are related to academic achievement and that can be modified with appropriate intervention. Motivational researchers have suggested that academic motivation is not fixed. Therefore, interventions that influence motivation, such as student perceived school engagement and sense of belongingness, will be key to bolstering motivation and subsequent achievement. For example, one study found that a brief intervention targeted at buffering college freshman's perception of social belonging increased African American's grade point average three years later (Walton, 2011). Furthermore, the study revealed that the performance of African American students who received the intervention performed more similarly academically to their White student counterparts and significantly reduced the gap in performance between the two groups. It is also important to foster the value and importance of academic achievement among students

of various racial and ethnic groups. As previous research and the current study have found, embedded achievement is directly related to achievement outcomes. Parental socialization practices are highly influential in communicating messages of racial or ethnic values. It will be important to determine the key factors in parent's messages that clearly communicate that achievement is important to one's racial or ethnic group. Modeling academic behaviors, home-school collaboration, parental involvement in school activities, and parental support and encouragement of learning activities may all be beneficial. One community support that has been shown by research to be effective in transmitting messages of embedded achievement is that of mentorship. For example, African American male students who participated in a mentorship intervention program that provided academic and social support by adult African Americans had higher GPAs than students who did not participate in the program (Gordon, Iwamota, Ward, Potts, & Boyd, 2009). In-group role models may also be effective in communicating that one's group values achievement One study revealed that students with same race, same gendered adult role models experienced significantly different achievement-related outcomes than students without similar role models (Zirkel, 2002). More specifically, ANOVA analyses revealed students with same race, same gendered role models had higher GPA's. Also, minority students had higher educational and professional goals than White students with matched role models.

Given the significant impact that peer groups have on academic motivation and achievement (Ryan, 2000, 2001) intervening with peers in racial and ethnic groups may be essential in encouraging academic achievement as a group norm. Using academically

successful peers as models to encourage achievement may be beneficial. Considering social-cognitive theory (Bandura, 1986), simply watching one's same race peers that are academically successful may promote the idea that achievement is valuable and attainable. Students that are highly influenced by peers, may perceive that education is valuable and important to one's race. Furthermore, they may view that if other peers that are similar to them racially or ethnically can succeed, so can they. Pairing academically successful and motivated peers with lower performing same race students, may be valuable in translating the importance of achievement to one's group. Peer mentoring programs and peer tutors may be helpful in promoting group norms.

## Limitations and Future Directions

The findings of the study should be interpreted in context of the study limitations. First, the participants in the study are considered an "at-risk" sample. Participants were included in the study based on their difficulties with reading literacy as measured by them scoring below the median on a district level measure of literacy. As such, this sample of students only reflects a subsample of those in the general population which may limit the generalization of results. Second, there was limited ability to address interactions involving school ethnic context. Research has shown that there are differences in achievement outcomes dependent on if the student is male or female and if he or she is a majority or minority student in the school context. In the current study, it would have been beneficial to determine the impact that the school demographics had on one's salience of race and subsequent academic achievement. Finally, although the study used a well-known measure of achievement, there are a variety of ways in which

achievement can be measured. Research shows that achievement scores from standardized achievement tests are highly stable, as was evidenced in the correlation analyses. Other measures of achievement such as grades, test scores, and teacher reports are more sensitive to changes in performance and may be a better depiction of how the student is performing in the school setting.

Future research is needed to replicate and extend these findings. In particular, larger samples representative of the full range of academic reading skills at school entrance are needed. Additionally, studies should address the role of acculturation and language proficiency in understanding the relationship between REI and students' engagement and achievement.

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