Ethnic Identity as a Moderator of the Association Between

School Connectedness and Academic Achievement

Among Mexican-Origin Youth

by

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ABSTRACT

The current study investigates the relationship between school connectedness and academic achievement and whether this relationship is moderated by ethnic identity. Participants included 436 Mexican-origin youth attending a middle school in a southwestern U.S. state. Multiple linear regression was used to analyze whether school connectedness is predictive of academic achievement, measured as standardized test scores, and whether ethnic identity moderates the association in this sample of Mexican-origin youth. Findings revealed that after controlling for age, lunch status, generational status, and gender, school connectedness was a positive predictor of standardized test scores in reading and math. Results also indicated that ethnic private regard moderated the association between school connectedness and standardized test scores in reading. These findings underscore the importance of possessing a positive ethnic identity for Mexican-origin youth in predicting academic outcomes.

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CHAPTER 1

INTRODUCTION

Graduating from middle and secondary school is an important objective that can

lead to more career opportunities, higher income, and positive psychological functioning

(Miller, & Porter, 2007; Ou, 2008; U.S Department of Education, 2013). For the 2012

school year in Arizona, the four year high school graduation rate of Latino students, most

of whom are of Mexican-origin, was 70.33%, compared to 84.11% for White and 71.4%

for African American students (Arizona Department of Education, 2014). As such, it is

necessary to identify factors that promote academic achievement, such as how connected

students feel to their school or whether their ethnic identity may influence their

educational experiences, especially among Mexican-origin youth, as they constitute the

largest Latino subgroup in the U.S. southwest (Pew Research Hispanic Trends Project,

2014).

Drawing on Bronfenbrenner's (1979) ecological systems theory, student

perceptions of school connectedness can interact with other individual characteristics,

such as how positively or how valued one feels as a member of one's ethnic group, to

potentially influence academic attainment and healthy participation in society among

youth (Benner, Graham, & Mistry, 2008; McMahon, Keys, Berardi, & Crouch., 2011;

Roeser, Eccles, & Sameroff, 2000). Research has shown that school environments that

facilitate positive relations with peers, support from teachers, safety, academic

engagement, feelings of belonging, and fair discipline practices lead to positive

perceptions of school connectedness (Libbey, 2004; Thapa, Cohen, Guffey, & Higgins-

D'Alessandro, 2013), which in turn is associated with academic achievement (Bryan et al., 2012; Cohen, McCabe, Michelli, & Pickeral, 2009). Additionally, a positive sense of ethnic identity has been shown to correlate positively with school connectedness among Latino students (Perreira, Fuligni, & Potochnick, 2010), and there is a growing body of research on the links between ethnic identity and achievement (Rivas-Drake et al., 2014). As such, the linkages between school connectedness, ethnic identity, and academic achievement are important to explore, particularly among Mexican-origin youth, the fastest growing segment of the U.S. population (U.S Census, 2011).

Despite a growing body of research exploring linkages between ethnic identity and achievement, research has yet to explore this linkage using standardized test scores as a proxy for academic achievement, which carries important implications for the educational progress and attainment of Mexican-origin youth. Standardized test scores may offer a more precise measure of achievement in terms of students ability to meet state standards compared to school- or self-reported grades and allow for standardized comparisons among students' across classrooms (Martínez, Stecher, & Borko, 2009). In addition, no studies were found that explore the extent to which ethnic identity moderates the association between school connectedness and academic achievement among Mexican-origin youth, despite the fact that there is a well established literature on the linkages between school connectedness and achievement (Benner & Graham, 2011; Diaz, 2005) and a growing literature on the linkages between ethnic identity and achievement (Rivas-Drake et al., 2014). Yet, there are reasons, which are discussed below, to expect that ethnic identity and school connectedness may interact to produce differential

educational outcomes among Mexican-origin youth. The current study investigates the association between school connectedness and academic achievement, ethnic identity and achievement, as well as, whether ethnic identity serves as a moderator in the association between school connectedness and academic achievement in Mexican-origin youth residing in the U.S. Southwest.

In the sections that follow, there is a review of literature on (1) the association between school connectedness and achievement, (2) ethnic identity and achievement, particularly among U.S. Mexican-origin youth, and (3) why exploring ethnic identity as a moderator of the association between school connectedness and academic achievement is an important direction for existing and future research.

CHAPTER 2

LITERATURE REVIEW

School Connectedness and Academic Achievement

In line with an ecological framework, the school environment constitutes a dynamic context that interacts with the individual and other contexts to facilitate development (Bronfenbrenner, 1979). Further, the school climate is a microsystem in which proximal processes occur and, in turn, influence student outcomes (Benner et al., 2008). In the current literature, school connectedness is a commonly measured construct that encompasses a student's perceptions of the school environment (Libbey, 2004; Rowe, Stewart, & Patterson, 2007; Shochet, Dadds, Ham, & Montague, 2006). Students who feel connected to their school typically feel that they belong, enjoy school, and have positive relationships with peers and teachers (Lohmeier & Lee, 2011; Whitlock, 2006). School connectedness is a multidimensional construct that can include academic engagement, belonging, discipline/fairness, extracurricular activities, enjoyment of school, student voice, peer relations, safety, and teacher support (Libbey, 2004). Although these nine constructs identified by Libbey (2004) as prevalent aspects of school connectedness, much of the current literature only focuses on one or two of these constructs such as, school bonding, school climate, school context, school engagement, student satisfaction with school, teacher support, and school involvement (Libbey, 2004; Loukas, Suzuki, & Horton, 2006; Shochet et al., 2006; Whitlock, 2006).

In the present literature, there are multiple terms and measures that represent concepts of school connectedness. In particular, the term school climate is prevalent in

educational research. School climate refers to student experiences of school life and is reflective of norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures (Thapa et al., 2013). Similar to Libbey's (2004) review of constructs related to school connectedness, Thapa et al. (2013) identified dimensions of the school climate, including safety, relationships, teaching and learning, institutional environment, and the school improvement process. Safety, relationships, teaching and learning, and the institutional environment parallel the concepts identified by Libbey (2004). Thus, school climate and school connectedness are different terms that both measure students' relationship to school. Another common term, school bonding, encompasses student attachment to school, attachment to teachers and staff, commitment to school, and school involvement (Bryan et al., 2009). Although, this term does not include student perceptions of safety and discipline/fairness, it is similar and related to school connectedness.

However, some of these terms and measures may represent different aspects of the construct, despite having the same name. Therefore, it is necessary to identify the items in the measure rather than to rely on the name of the construct. For instance, Niehaus, Rudasill, and Rakes (2012) defined school connectedness as student perceptions of teacher and peer support. Although teacher and peer support contribute to school connectedness, this definition is narrow and does not include other dimensions of the construct. In another study, Diaz (2005) defined school attachment as a student's sense of belonging or feeling as though they are part of the school. In this measure, aspects of safety, fairness, and relationships with teachers are not emphasized. The present study

uses the Add Health School Connectedness Scale, which defines school connectedness as student perception of belonging to the school, feelings of safety, having close relationships with peers and teachers at school, enjoyment of school, and the belief that teachers treat students fairly, (Furlong, O'Brennan, & You, 2011). This definition encompasses the belonging, discipline/fairness, safety, school satisfaction, and relationship aspects of school connectedness. Further, the school connectedness measure used in the present study is representative of school connectedness, as it includes the majority of the dimensions of school connectedness identified in Libbey's (2004) review.

Links with Academic Achievement. School bonding, teacher support, and positive perceptions of the school climate have been found to be predictive of academic achievement in school (Benner & Graham, 2011; Bryan et al., 2012; Diaz, 2005; Lecroy & Krysik, 2008; Niehaus et al., 2012; Sherblom, Marshall, & Sherblom, 2006). In particular, Bryan et al. (2012) found that school bonding worked directly and indirectly to positively affect math achievement scores in high school seniors. Attachment to school, defined as how much a student likes school and a sense of school fairness, directly increased achievement, while the relationship between attachment to teachers and academic achievement was mediated by prior academic achievement. In a population of Latino students, Maurizi, Ceballo, Epstein-Ngo, and Cortina (2013) revealed that teacher support and school peer support positively predicted school belonging, which in turn, was associated with academic aspirations, expectations, and grades.

Much of the previous research investigating the link between school connectedness and academic achievement used student grade point average (GPA) as a

proxy for academic achievement (Benner & Graham, 2011; Diaz, 2005; Gonzalez & Padilla, 1997). In a comparison of U.S. Mexican-origin high school students who received high grades with those who received low grades, Gonzalez and Padilla (1997) found a significant difference in school belonging. In other words, students who received mostly "A" grades reported higher school belonging than students who received mostly "D" grades. Additionally, school belonging predicted about 20% of the variance in student grades (Gonzalez & Padilla, 1997). In a longitudinal study following Latino, predominantly Mexican-origin, students across the first two years of high school, school climate was found to be predictive of grade point average (GPA) and number of absences in the spring of tenth grade (Benner & Graham, 2011). Further, Diaz (2005) found that student attachment was linked with GPA in Latino students, who were primarily of Mexican-origin, living in rural Minnesota. Although this finding is supportive of the linkage between school connectedness and academic achievement, the sample is representative of rural Latinos from Minnesota, while the present study seeks to investigate this relationship in urban Mexican-origin students residing in the U.S. Southwest. Additionally, the aforementioned studies measure academic achievement through student reported GPA, while the present study is utilizing standardized test scores to represent achievement.

Although the majority of research suggests that school connectedness concepts positively affect academic achievement, one study found that sense of belonging did not significantly predict Latino, mostly Mexican-origin and Puerto Rican, students' GPA (Sanchez, Colon, & Esparza, 2005). However, findings suggested that school belonging,

which is similar to school connectedness, significantly predicted absenteeism from school, expectancies for English, intrinsic value for English, and academic effort, all of which are heavily related to academic achievement. As such, students who indicated higher levels of school belonging had fewer school absences and higher academic motivation. The current study seeks to add to the literature on the links between school connectedness and academic achievement among a sample of urban Mexican-origin youth, and add to this growing body of research by exploring the moderating role that ethnic identity may play in the association between school connectedness and academic achievement.

Ethnic Identity and Academic Achievement among U.S. Mexican-Origin Youth

Ethnic identity is an important component of youth development, particularly among ethnic minority youth residing in multicultural settings such as the United States, which has been linked to greater psychological and academic outcomes (Altschul, Oyserman, & Bybee, 2006; Brouillard & Hartlaub, 2005; Fuligni, Witkow, & Garcia, 2005; Rivas-Drake et al., 2014; Supple, Ghazarian, Frabutt, Plunkett, & Sands, 2006). Ethnic identity develops from a sense of belonging to a particular group and feelings regarding group membership (Phinney, 1990). Ethnic identity is a multidimensional construct that typically is defined as including exploration of one's ethnic background, determining the meaning of one's ethnicity, and affirmation of one's ethnic group membership (Phinney, 1990). Further, individuals who view their ethnic group membership as positive tend to have higher self esteem (Phinney, Cantu, & Kurtz, 1997; Umaña-Taylor, Diversi, & Fine, 2002; Umaña-Taylor, Yazedjian, & Bámaca-Gómez,

2004). Therefore, ethnic identity constitutes an important aspect of identity development that facilitates a positive sense of self.

Previous research has revealed that different dimensions of ethnic identity may be differentially related to outcomes (Supple et al., 2006; Umaña-Taylor et al., 2004). For instance, Supple et al. (2006) found that ethnic identity affirmation (i.e., feeling positively about one's ethnic identity) was significantly related to school performance, while exploration and resolution were not. Another term, ethnic private regard, closely mirrors measures of ethnic affirmation. This term was originally conceptualized as a measure of how positively one feels about one's racial identity (Sellers, Chavous, & Cooke, 1998) and has been adapted to measure how positively individuals' feel about their ethnic identity (Hughes, Way, & Rivas-Drake, 2011). The current study is focused on measuring positive affect regarding ethnic group membership among Mexican-origin youth because this dimension of ethnic identity has been the most consistently measured dimension in previous research (Rivas-Drake et al., 2014) and most consistently associated with positive outcomes (see Neblett, Rivas-Drake,& Umaña-Taylor, 2012 for reviews).

In a recent meta-analysis, Rivas-Drake et al. (2014) found that positive ethnic-racial affect (i.e., private regard) was positively related to academic achievement and academic attitudes. Although the magnitude of the association was small, students who felt positively about their ethnic group membership tended to have higher academic achievement and more positive academic attitudes (Rivas-Drake et al., 2014). For instance, Fuligni et al. (2005) found that U.S. Mexican-origin adolescents who reported

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that they felt positive regard for their identity were significantly more likely to have stronger beliefs in the utility of education and school success and a higher level of intrinsic interest in school. Supple et al. (2006) found a positive relationship between ethnic identity affirmation and school performance, measured by teacher reports of grades, work habits, and cooperation. Additionally, Oyserman (2008) found that Latino students in eighth grade who indicated a positive sense of being Latino and a sense of connection with their ethnic groups' contributions to society tended to have higher grades. In a sample of predominately Mexican-origin college students, Ong, Phinney, and Dennis (2006) found that ethnic identity moderated the relationship between socioeconomic status (SES) and grade point average (GPA). In other words, students with low SES and low ethnic identity had lower grades than students with low SES and high ethnic identity. These findings suggest that having a positive sense of one's ethnic identity may support academic achievement.

In addition to promoting academic achievement, ethnic identity has also been identified as a protective source for ethnic minority youth, especially against the harmful effects of discrimination in the school setting (Brown & Chu, 2012; Romero, Edwards, Fryberg, & Orduña, 2014; Umaña-Taylor, Wong, Gonzales, & Dumka, 2012). For instance, Umaña -Taylor et al. (2012) found that positive ethnic identity affirmation minimized the negative impact of discrimination on male Mexican origin youths' externalizing behaviors in school. Romero et al. (2014) revealed that ethnic affirmation had a protective effect against depressive symptoms for minority youth, primarily Mexican-origin, who experienced discrimination-related stress. As ethnic identity has

been found to act as a buffer against discrimination in the school setting, it is important to explore whether ethnic identity can serve as a protective source for other negative aspects of the school environment, such as an unfavorable school climate or a lack of connectedness to school. Rooted in an ecological framework, the present study seeks to investigate the moderating role of ethnic identity in the association between school connectedness and academic achievement in Mexican-origin youth.

Ethnic Identity as a Moderator of the Association between School Connectedness and Academic Achievement

Based on an ecological framework, ethnic identity may serve as a moderating variable in the association of school connectedness and academic achievement. As previously mentioned, the ecological model posits that interactions between the individual and ecological contexts influence youth development (Bronfenbrenner, 1979). Ethnic identity is a positive personal attribute that may interact with other contexts, such as the school context, to promote development. Youth with positive ethnic identities are more likely to have higher self-esteem, and a more positive sense of self, which can protect against risk factors (Phinney et al., 1997). For instance, ethnic identity has been found to reduce the possible harmful effects of discrimination and negative peer norms in the school setting for youth (Brown & Chu, 2012; Romero et al., 2014; Shin, Daly, &Vera, 2007; Umaña-Taylor et al., 2012). Shin et al. (2007) found that middle school students, most of whom identified as Latino, who reported more positive ethnic identity, were less affected by negative peer norms and had higher school engagement than students who reported lower levels of ethnic identity. Further, peer norms and peer

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support are related factors to school connectedness (Libbey, 2004). As such, having a positive ethnic identity can relate to a positive sense of self (Johnson, Robinson-Kurpius, Rayle, Arredondo & Tovar-Gamero, 2005), which can provide protection against risk factors that may lead to lower school achievement, such as low school connectedness.

The current study seeks to add to the literature regarding the role of school connectedness in academic achievement and whether ethnic identity serves as a moderating variable for Mexican-origin youth. Both school connectedness and ethnic identity have been found to relate to higher academic achievement in Mexican-origin youth (Benner & Graham, 2011; Diaz, 2005; Fuligni et al., 2005; Rivas-Drake et al., 2014; Supple et al., 2006). In terms of the possible moderating role of ethnic identity, previous research has found that a positive ethnic identity can mitigate the negative effects of discrimination in school settings (Brown & Chu, 2012; Romero et al., 2014; Umaña-Taylor et al., 2012). Therefore, it is likely that ethnic identity can serve as a protective factor for students who do not feel connected to their school. It is imperative to explore factors that can promote achievement in Mexican-origin youth, as the graduation rate in this population tends to be lower compared to that of White and African-American youth in Arizona (Arizona Department of Education, 2014). Furthermore, investigating the impact of school connectedness on achievement and whether ethnic identity moderates this association in Mexican-origin students can guide future research and interventions applicable to this population.

Individual Differences in Achievement

It is important to consider individual differences that may impact achievement in addition to the effects school connectedness and ethnic identity may have on academic outcomes. With this in mind, the present study controls for age, gender, socioeconomic status (SES), and generational status. In terms of developmental differences, school connectedness tends to decrease as students mature, which suggests that student grade level may impact the associations between school connectedness and achievement (Furlong et al., 2011; Whitlock, 2006). As school connectedness has been found in previous findings to decline over the course of schooling, it is important to control for development differences. Previous research has also found gender differences in academic achievement, which suggests that girls tend to have higher grades compared to boys (Chee, Pino, & Smith, 2005; Pomerantz, Altermatt & Saxon, 2002). Further, in a recent meta-analysis investigating 502 effect sizes from 369 studies, Voyer and Voyer (2014) found a small significant effect size indicating that girls have an advantage over boys academically, regardless of academic outcome measures (i.e., letter grades and standardized tests).

In terms of SES differences, Sirin's (2005) meta-analysis of 74 studies found a medium effect size in the association between family SES and academic achievement and a large degree of association between school level SES and achievement. This suggests that students who come from families with a higher SES and/or attend schools with a higher aggregated SES tend to have higher academic achievement. The fourth variable that is controlled for in the current study is generational status, as it has been found to be

related to different academic aspirations, expectations, and outcomes (Palacios, Guttmannova, & Chase-Lansdale, 2008; Rosenbaum & Rochford, 2008). Given previous findings that suggest first generation youth tend to have higher academic attitudes, it is important to control for generational differences, especially due to the fact that all of the current study's participants are immigrants from Mexico. Furthermore, grade level, gender, SES, and generational status are all relevant demographic variables may impact academic achievement and are controlled for in the present study.

The Present Study

The purpose of the current study is to investigate the relationship between school connectedness and academic achievement, ethnic identity and achievement, as well as, the moderating role of ethnic identity in the association between school connectedness and achievement in Mexican-origin youth. Three research questions guide the current study.

1. What is the association between school connectedness and reading and mathematics achievement among Mexican-origin youth in Arizona?

2. What is the association between ethnic identity and reading and mathematics achievement among Mexican-origin youth in Arizona?

3. Is the association between school connectedness and reading and mathematics achievement among Mexican-origin youth in Arizona moderated by ethnic identity?

In terms of the first two research questions, it is hypothesized that both school connectedness and ethnic identity will be associated positively with higher reading and

mathematics achievement among Mexican-origin youth in Arizona. Regarding the third research question, it is hypothesized that ethnic identity will moderate the relationship between school connectedness and reading and mathematics achievement. Specifically, it is hypothesized that higher school connectedness and higher ethnic identity will lead to higher achievement in reading and mathematics. Further, it is predicted that a more positive ethnic identity will serve as a protective factor for students who have low school connectedness, allowing such students to also obtain higher academic achievement than students with a less positive ethnic identity.

CHAPTER 3

METHODOLOGY

Participants

The data for the current study comes from a larger study examining identity

development among Latino youth in Arizona (Kornienko, Santos, & Updegraff, in press;

Kornienko & Santos, 2014; Santos, Menjívar, & Godfrey, 2013; Santos & Menjívar,

2013; Santos & Updegraff, in press). The analytic sample of the present study consists of

youth who identified as being of Mexican-origin in the first wave of data collection,

which was available for the present analysis. As a result, participants included 436

students who attended a public middle school located in the greater Phoenix, Arizona

region. Participants ranged from 11 to 14 years of age. The average age of participants

was 12.34 years old (SD =.95). Participants were all in sixth (n = 146), seventh (n = 152),

or eighth grade (n = 138). About half of participants were female (51.8%, n = 226).

Youth of Mexican-origin constitute the largest group within the school; over 50% of the

school population surveyed identified as being of Mexican-origin. Participation rate in

the middle school where this study was conducted was 84.9%. In addition, the middle

school where the data were collected serves primarily low income students (Percentage of

Children Approved for Free or Reduced Price Lunch, 2014).

Measures

Demographic Variables. Demographic variables included in this study are grade,

gender, generational status, and district-reported free and reduced lunch status (a proxy

for socio-economic status). Grade level includes sixth, seventh, and eighth grade.

Approximately 33% of students were in sixth grade (n = 146), 35% in seventh grade (n = 152), and 32% in eighth grade (n = 138). Gender was treated as a dichotomous variable (1 = male, 0 = female). About half of the participants were female (51.8%, n = 226). Student SES was measured with a dichotomous measure of youths' qualification for free or reduced lunch status. Free or reduced lunch status was reported directly by the district and is determined based on the students' family income. The breakdown of student qualification for free or reduced lunch is 87.2% of students qualifying for free lunch (n = 380), 10.1% of students not qualifying (n = 44), and lunch status was not available for 2.8% of students (n = 12). Generational status was determined based on the students' and parents' place of birth. Generational status consists of four categories. The first category, first generation, includes students who were born outside the United States. Second generation is divided into two groups. The first group of second generation includes students who were born in the U.S. and both parents were born abroad. The second group of second generation students includes youth who were born in the U.S. and have at least one parent who was born outside the United States. Third generation students are those who were born in the U.S and both parents were born in the United States. The breakdown of generational status in this study includes: 16.3% first generation (n = 71), 45.6% second generation both parents born abroad (n = 199), 12.6% second generation one parent born abroad (n = 55), and 25.4% third generation (n = 111).

Ethnic Identity. The current study measures ethnic identity by using an adapted version of the private regard subscale of the Multidimensional Inventory of Black Identity-Teen (MIBI-T; Scottham, Sellers, & Nguyên, 2008), which assesses positive

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feelings towards one's ethnicity (instead of race, as in its original form). Prior studies of Latino youth have found the adapted private regard subscale to be reliable and valid with this population of youth (Johnson et al., 2005; Hughes et al., 2011). Cronbach's alpha for an adapted version of the MIBI in a sample of Latino underclassmen at a U.S southwest university was .78 (Johnson et al., 2005). This subscale includes 3 items rated on a 5-point Likert scale that assess whether participants feel positively towards their ethnic group membership. Response options ranged from (1) *strongly disagree* to (5) *strongly agree*. A sample item includes, "I am happy that I am of my ethnic group." (see Appendix). A higher score on this measure indicates more positive feelings towards one's ethnicity. In terms of reliability, Cronbach's α in the present study was .87.

School Connectedness. The current study defines school connectedness student perception of belonging to the school, feelings of safety, having close relationships with teachers, enjoyment of school, and the belief that teachers treat students fairly (Furlong et al., 2011; Resnick et al., 1997). This measure of school connectedness is the most consistently used in the existing literature and was used in the Add Health Study (Furlong et al., 2011). It consists of 5 items rated on a 5-point Likert scale ranging from (1) *Strongly disagree* to (5) *Strongly agree*. A sample item includes, "I feel close to people at this school." (see Appendix). A higher score on this measure indicates more positive perceptions of school connectedness. In previous studies, this school connectedness measure has exhibited good reliability in Mexican-origin youth e.g., α = .83; (Furlong et al., 2011). In terms of concurrent validity, this measure of school connectedness in a sample of Mexican-origin youth was moderately correlated ($r = .47$) with the School

Supports Scale from the California Healthy Kids Survey Resilience Youth Development Module, which measures student perception of caring relationships and high expectations from teachers at school (Furlong et al., 2011). Cronbach's α for this scale in the present study was .76.

Academic Achievement. Academic achievement was measured by using standardized test scores in mathematics and reading from a norm referenced test called Arizona's Instrument to Measure Standards (AIMS). All students attending the school took the AIMS in the spring (mid to late April) in order to comply with state and federal mandates. The AIMS are considered a high stakes test because students must successfully pass the test in order to graduate from high school (AIMS High School Graduation Requirements, 2013). The AIMS scale scores for math and reading (i.e., ELA, or English Language Arts) were separately standardized within each grade. The reading section was standardized in 2005 and the math portion was standardized in 2010. The AIMs scores are vertically scaled, in order for comparison across grades. The scale scores for seventh graders ranged from 260 to 700 for ELA and 180 to 620 for mathematics. The scale scores for eighth graders ranged from 270 to 800 for ELA and 200 to 640 for mathematics. Norm referenced test items came from a pool of items from the Stanford Achievement Test-10 (Stanford-10) that were aligned to Arizona content standards (Arizona's Instruments to Measure Standards, 2013). The Stanford-10 has been found to have adequate reliability and validity (Harcourt Assessment,1923-2003).

The AIMS reading and mathematics test have demonstrated adequate validity and reliability (Arizona's Instrument to Measure Standards, 2013). In terms of reliability,

Cronbach's α for the reading section among Hispanic student test takers in Arizona in 2013 was .76 for all three grade levels represented in the present study (i.e., 6th, 7th and 8th grades). For the mathematics section, the Cronbach's α among Hispanic student test takers in Arizona in 2013 was .84 for sixth graders, .85 for seventh graders, and .85 for eighth graders. The AIMS appear to have construct validity, as the norm referenced section of reading is highly correlated with the criterion referenced section of reading, which were created by Arizona teachers and aligned to Arizona's content standards, for students in grade 6 ($r = .87$), grade 7 ($r = .88$), and grade 8 ($r = .74$). The norm referenced section of mathematics is also highly correlated with the criterion referenced section of mathematics for students in grade 6 ($r = .91$), grade 7 ($r = .91$), and grade 8 ($r = .79$) (Arizona's Instrument to Measure Standards, 2013). The criterion referenced items were written by Arizona teachers who received professional development and support documents to construct test items and reviewed by professionals at Pearson Assessment and Arizona Department of Education (Arizona's Instrument to Measure Standards, 2013).

Procedure

Data were collected by administering surveys, which took approximately 90 minutes, and survey administration took place during two class periods that were least disruptive to students' learning. Students answered survey questions individually, while these questions were read aloud to the class, in order to assure student comprehension. The survey administration was supervised by two to four trained research assistants. All surveys were administered in English. Survey administrators were in the classroom while

students completed surveys and answered student questions in order to assure comprehension. Student identity information, apart from a unique identification number on each survey, was separated from student survey responses to ensure confidentiality. Upon survey completion, students received a rubber bracelet with the projects' name on it as a way to thank students for their time. As previously noted, the current study used a subset of participants from the original study, as the aim of this research is to investigate the impact of school connectedness on academic achievement and whether ethnic identity serves as a moderating variable in a sample of Mexican-origin youth residing in a metropolitan southwestern city. Students took state-mandated standardized tests approximately two months after all other measures were collected.

Analytic Plan

Missing data analysis suggested that there were data that appeared to be missing at random (MAR; Schafer, 1999). Demographic data was complete for all variables except lunch status, which had 2.8% of missing responses. In terms of continuous variables, missingness was also 2.8% for each of the AIMS standardized test scores. Only .2% of responses were missing for the school connectedness variable, and there was no missing data on the ethnic private regard scale. To account for missingness and to reduce error, a multiple imputation procedure was used whereby a pooled dataset was created and averaged from 20 datasets with imputed values that were arrived at from 200 iterations.

Using this imputed dataset, a Pearson bivariate correlation analysis was conducted to explore associations among study variables. Hierarchical linear regression was used to

address the study's main research question concerning the moderating role of ethnic private regard in the association between school connectedness and achievement. Two sets of regressions were conducted, each with a standardized test score as the outcome: math and reading. In each regression, Step 1 included all demographic variables that served as controls to explore the main study questions. These included: age, in order to account for developmental differences in the associations between private regard; school connectedness and standardized test scores; gender, given differential attainment among boys and girls (Chee, Pino, & Smith, 2005); district-reported lunch status which is a proxy for socioeconomic status—a well established predictor of achievement (Sirin, 2005); and generational status given differential attainment among youth of diverse generational status (Rosenbaum & Rochford, 2008). Step 2 included the school connectedness measure to explore its association with each of the two standardized test scores. Step 3 included ethnic private regard scores to explore their unique association with each of the two standardized test scores. Step 4 included an interaction term between school connectedness and ethnic private regard to explore the moderating role of ethnic private regard in the association between school connectedness and standardized test scores. Predictors were centered prior to creating this interaction term, and the interaction was depicted one standard deviation above and below the mean of the moderator to indicate high and low values.

CHAPTER 4

RESULTS

Preliminary analyses explored the distribution of each continuous variable.

Results revealed that all variables were normally distributed. Results from a Pearson

bivariate correlation analysis revealed that there was a negative association between

generational status and lunch status, suggesting that individuals who were first generation

were more likely to be eligible for free and reduced meals, a proxy for being of lower

socioeconomic status. There was also a negative association between age and ethnic

private regard, suggesting that older participants tended to report feeling less positively

about their ethnic group membership. There was also a negative association between age

and school connectedness suggesting that older participants tended to report feeling less

connected to school. There was a negative association between generational status and

ethnic private regard, as well as a negative association between generational status and

school connectedness. This suggests that individuals of later generations felt less

positively about their ethnic group membership, and felt less connected to school. There

was also a negative association between age and ethnic private regard, and age and

school connectedness. This suggests that older participants tended to report lower ethnic

private regard and lower levels of school connectedness. Ethnic private regard was

positively associated with school connectedness, and standardized test scores in reading

and math. School connectedness was also positively associated with standardized test

scores in reading and math (see Table 1).

Multiple regression analyses results revealed that, when accounting for age, lunch status, generational status and sex of participant, there was a positive association between school connectedness and standardized test scores in reading (Table 2), and math (Table 3). Additionally, ethnic private regard moderated the association between school connectedness and standardized test scores in reading (Table 2; Figure 1). The simple slopes test revealed that the regression slopes were significantly different from zero at low levels of ethnic private regard (i.e., 1 SD below mean; $t(436) = 2.91$, $p < .01$), and non-significant at high levels of ethnic private regard (i.e., 1 SD above mean; $t(436) = 1.30$, $p =$ n.s.). The association between school connectedness and achievement did not vary among participants who reported higher levels of ethnic private regard. Participants with higher ethnic private regard reported higher levels of achievement and being low or high on school connectedness did not change that association. The association between school connectedness and achievement did vary among participants who reported lower levels of ethnic private regard such that participants who were low on ethnic private regard and low on school connectedness reported lower levels of achievement compared to participants who were high on school connectedness and ethnic private regard.

CHAPTER 5

DISCUSSION

Although previous research has identified school connectedness and ethnic identity as factors that promote academic achievement, no studies have investigated the moderating role of ethnic identity in the association between school connectedness and achievement in Mexican-origin youth. Grounded in an ecological framework, this study builds on previous research by investigating the role of school connectedness and ethnic identity in academic achievement. Further, the present study explored whether ethnic identity moderates the relationship between school connectedness and academic achievement via standardized test scores. In particular, it was hypothesized that high ethnic identity and high school connectedness would lead to higher academic achievement. Additionally, this study adds to the existing literature by using a standardized measure of academic achievement through standardized test scores in math and reading, rather than self-reported student grades, which is more a commonly used measure of achievement in the literature. Given the importance of standardized test scores to the educational trajectories of all youth, including Mexican-origin youth, especially their impact on school graduation, it is important to explore predictors of these important measures of educational attainment.

The findings of the present study revealed that youth with higher perceptions of school connectedness tended to be younger, first generation, and female. The decrease of school connectedness throughout adolescence is expected and consistent with the literature on school connectedness and engagement (Niehaus et al., 2012; Whitlock,

2006). It is likely that younger students seek out more support from teachers and adults in school compared to older students who are more likely to rely on peers for support. Generational status was significantly correlated with school connectedness, with First generation youth indicating higher perceptions of school connectedness. This is consistent with previous findings that indicate that first generation immigrants tend to have more positive school attitudes compared to later generation youth (Palacios et al., 2008; Rosenbaum & Rochford, 2008), but contrasts with other prior studies suggesting that later generation youth are advantaged academically over first generation youth (Kalogrides, 2009). Although first generation youth in the present study indicated higher perceptions of school connectedness, there was not a significant relationship between generational status and reading or mathematics achievement. As such, first generation youth did not appear to have an advantage academically over their later generation peers in terms of standardized test scores. It is possible, however, that the more positive perceptions of school connectedness held by first generation youth helped protect them against negative risk factors common to new immigrants (e.g., language barrier, lower SES), and acted to diminish significant differences in reading and mathematics achievement among the generations. Future scholars may want to test for this specifically.

The gender difference, with boys reporting lower levels of school connectedness, has been partially supported in previous research, with some previous findings in alignment with this study (Goodenow, 1993; Nickerson et al., 2011) and others finding no gender differences (Johnson, Crosnoe, & Thaden, 2006; Sanchez et al., 2005). Future

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researchers should further investigate gender differences in school connectedness, particularly among Mexican-origin youth, as many of the previous findings were conducted with heterogeneous populations of Latino students. The literature on other achievement indicators (not school connectedness, per se) suggests that boys in general, including and especially lower-income Latino and African American males, are increasingly behind their female counterparts on key indicators of achievement. From the elementary grades onward, girls outperform boys on literacy achievement tests, and the size of this gap increases among lower income, African American and Latino youth (e.g., Buchmann, DiPrete, & McDaniel, 2008). Boys are more likely than girls to drop out of high school (Snyder & Dillow, 2007) and are less likely than girls to attend college and earn degrees (Freeman, 2005). This finding that boys reported lower levels of school connectedness is thus not surprising. One mechanism that has been used to explain these differential patterns in achievement is gender-typing. In a study that included Latino youth, primarily of Mexican-origin also conducted in middle school in the U.S. southwest, it was shown that rigid attitudes about gender were associated with declines in standardized test scores (Santos et al., 2013). Given these findings and patterns, future researchers may want to explore how gender-typing relates to school connectedness in predicting achievement.

In terms of ethnic identity, youth who indicated higher levels of positive private regard were more likely to be younger, first generation, and female. The significant difference in ethnic identity by grade level was unexpected, as previous research using the same measure (however, with a heterogeneous population of Latino youth) has

revealed ethnic identity to be a stable construct over the course of middle school (e.g., Hughes et al., 2011). It is possible that the context of the present study plays a role in influencing this finding. The current study investigated ethnic identity among youth residing in Arizona, which is a state that has enacted immigration legislature that has been argued to promote racial profiling, particularly targeted at individuals of Mexican-origin, the largest immigrant group in the state (Ortega Melendres et al., 2013). In addition, Arizona has been found to have the most hostile immigrant climate in the United States (Pham & Hoang Van, 2014). As youth develop, they may become more aware of this immigrant-hostile context which may contribute to declines in feeling positive about their ethnic identity.

In terms of gender, male youth reported lower ethnic identity compared to females. This finding is inconsistent with previous research, which has suggested that ethnic identity does not typically vary by gender (French et al., 2006; Pahl & Way, 2006). Again, it is likely that the context of this study, which is an immigrant hostile environment, played a role in this finding. One possibility is that males perceived more discrimination than females, which could have further led to more negative perceptions of ethnic identity. In support of this, Cassidy et al. (2004) found that young male adults perceived more discrimination than females and that the men who reported experiencing more discrimination had lower personal and ethnic self esteem. Future researchers should further investigate gender differences in ethnic identity in immigrant-hostile vs. non-immigrant hostile settings.

Ethnic identity was negatively correlated with generational status, such that levels of private regard decreased from first to later generations. On one hand, one might expect that the immigrant-hostile context in which this study took place would lead first generation youth to feel particularly less positive about their ethnic background because they may be more vulnerable to deportation, potentially due to status or language, relative to later generation youth. On the other hand, the longer time youth and their families spend in the state, the more aware they may become of this immigrant-hostile context, which may negatively impact their ethnic identity over time and thus lead to a decrease in feeling positive about being of Mexican-origin.

Both school connectedness and ethnic identity were positively related to standardized test scores in mathematics and reading, which supports the first and second hypotheses. As expected, these findings are consistent with previous research and suggest that Latino youth who feel connected to their school (Benner & Graham, 2011; Diaz, 2005) and feel positively about their ethnic identity (Rivas-Drake et al., 2014, Supple et al., 2006) tend to have higher academic achievement. This study significantly contributes to the existing literature by using standardized test scores as a proxy for academic achievement, as standardized tests carry important implications for the educational trajectories of youth, with a key impact on ability to graduate from one school year to the next (Martínez, Stecher, & Borko, 2009). As expected, school connectedness and ethnic identity were positively correlated. As such, higher perceptions of connectedness to school were linked with more positive feelings of ethnic identity.

After controlling for age, district-reported free/reduced lunch status (a proxy for socio-economic status), generational status, and gender, school connectedness and ethnic identity were significant positive predictors of academic achievement in reading and mathematics. This suggests that controlling for the effects of gender, SES (via lunch status), age, and generational status (all factors that have been linked to educational outcomes in a variety of ways), Mexican-origin youth who reported feeling more positive about their school and who reported higher levels of ethnic private regard were more likely to have higher scores on the standardized reading and mathematics test. This finding further provides evidence of the positive effects of feeling connected to one's school (Bryan et al., 2012), and feeling positively about one's identity (Rivas-Drake et al., 2014) in terms of achievement.

In terms of the moderating role of ethnic identity in the association between school connectedness and academic achievement, it was hypothesized that higher ethnic identity and higher school connectedness would promote greater levels of achievement in conjunction, or by offsetting the negative impact of either being low (i.e., individuals with low private regard would benefit from having higher school connectedness and vice versa). This hypothesis was partially supported in that among participants who reported low levels of ethnic private regard, there was a positive association between achievement in reading and school connectedness. Students with low ethnic private regard and low school connectedness scored significantly lower on the reading standardized test than students with low ethnic identity and high school connectedness. At high levels of ethnic private regard, however, the association between school connectedness and achievement

did not matter. The combination of higher school connectedness and higher ethnic private regard did not lead to increased achievement in reading (or math), as was hypothesized. However, as hypothesized and previously noted, high ethnic private regard (e.g., feeling positively about being of Mexican-origin) did serve a protective role in predicting greater achievement in reading among students who reported low school connectedness, which is in line with previous research that has identified ethnic identity as a protective factor in the school setting (Rivas-Drake et al., 2014; Umaña-Taylor et al., 2012).

It could be that having a positive sense of ethnic private regard among Mexican-origin youth residing in an immigrant-hostile state such as Arizona is particularly important in terms of promoting achievement, and that maintaining these high levels of ethnic positive affect within this context confers significant benefits in the school setting above and/or beyond the benefits of higher school connectedness. In a study of immigrant-origin youth, Tummala-Narra and Claudius (2013) found that having a positive sense of ethnic identity reduced the impact of perceived discrimination from adults in school on depression, which in turn, positively impacts achievement, as achievement in school is related to psychological well-being (Sznitman, Reisel, & Romer, 2011). A positive sense of ethnic identity may protect Mexican-origin youth from the negative by-products of living in an environment that is hostile to immigrants from Mexico.

An alternative explanation for this finding may be related to the school ethnic/racial composition where the study took place. Youth of Mexican-origin were the dominant group at the school. It is plausible that within this context where Mexican

culture is visible and dominant, having a positive sense of ethnic identity is, perhaps in part, also feeling positive about one's school—thus, there was no value added by school connectedness in the association between high ethnic private regard and achievement. Because I only have data from one school, I was unable to test whether the association between achievement, school connectedness and ethnic identity vary across school contexts, something future scholars may want to undertake.

It is interesting to note that ethnic identity only moderated the relationship between school connectedness and academic achievement in reading, and not in mathematics. It is possible that ethnic identity plays a larger role in reading because of the social contexts that surround pieces of writing that youth are typically assigned to read. For instance, the majority of books and short stories students read in school depict White European-American protagonists and very few, if any, center on Mexican–origin individuals or include Mexican culture. On the other hand, the context of mathematics is not typically dependent on ethnicity or culture. It is possible that Mexican-origin youth with low ethnic identity and low school connectedness performed worse on the reading standardized test because the majority of reading assignments speak to White, European-centric culture, rather than their own ethnic group. This, in turn, may have decreased student self esteem or self concept in reading for those students who do not have pride in their ethnic identity group membership. Despite this, the findings partially support the hypothesis that ethnic identity serves as a positive moderator in the association between school connectedness and reading achievement for Mexican-origin youth.

Limitations

A few limitations to the present study should be noted. First, this study was cross-sectional and correlational in nature and causal relations cannot be stated about the associations found in this study. A second limitation concerns the possibility of social desirability in the use of self-report scales to measure ethnic private regard and school connectedness. The study was conducted at one middle school where Mexican-origin youth were the majority group. As such, these findings are not generalizable to other contexts where Mexican-origin youth are the minority group. The study was conducted with Mexican-origin youth in the U.S. southwest and is not generalizable to all Latinos or Latinos in other regions. Another limitation is that the standardized test used to measure achievement was administered in English. As all of the participants were of Mexican-origin, it is possible that some participants were not proficient in English and, because of this, may not have done as well on the achievement test as they would on a test administered in Spanish. Future researchers may want to consider triangulating data by asking teachers to report on students' levels of school connectedness as evident by their daily performance in the classroom.

Conclusion

Despite these limitations, the findings in this study provide support for the positive effects of ethnic identity and school connectedness in academic achievement and add to the literature by exploring the moderating role of ethnic identity in the association between school connectedness and achievement among Mexican-origin youth. Previous research has identified both school connectedness and ethnic identity as positive

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predictors of achievement. The current study takes this research a step further by investigating ethnic identity as a moderator in the association between school connectedness and achievement. The findings partially supported the main hypothesis, in that the association between school connectedness and reading achievement was moderated by ethnic identity among youth who indicated low ethnic identity private regard. Further, ethnic identity appeared to act as a protective factor for youth who indicated lower levels of school connectedness. The findings underscore the importance of positive affect regarding ones' ethnic identity for Mexican-origin youth living within an immigrant-hostile context and within a school context where they are the dominant group. Future research should further investigate the associations and inter-relations between ethnic identity, school connectedness and academic achievement among Mexican-origin youth across diverse school contexts.

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APPENDIX A

ETHNIC IDENTITY PRIVATE REGARD AND SCHOOL CONNECTEDNESS

ITEMS

Ethnic Identity Private Regard

1. I am happy that I am of my ethnic group

2. I am proud to be of my ethnic group

3. I feel good about people of my ethnic group

School Connectedness

1. I feel close to people at this school

2. I feel I am part of this school

3. I am happy to be at this school

4. The teachers at this school treat students fairly

5. I feel safe in my school

Table 1. Correlations, Means, and Standard Deviations of Study Variables ($N = 436$)

	1	2	3	4	5	6	7	8	*M*	*SD*
1. Age	--								12.34	.95
2. Lunch Status[1]	-0.10	--							.90	.30
3. Generational Status[2]	0.02	-0.18**	--						2.47	1.04
4. Sex[3]	0.05	0.02	-0.01	--					.48	.50
5. Private Regard	-0.15**	0.07	-0.10*	-0.12*	--				4.20	.77
6. School Connectedness	-0.18**	0.03	-0.10*	-0.16**	0.34**	--			3.82	.78
7. AIMS Math	-0.05	-0.06	-0.08	0.01	0.19**	0.19**	--		414.92	40.25
8. AIMS Reading	-0.04	-0.08	0.04	-0.09	0.25**	0.18**	0.74**	--	508.47	40.84

[1]1 = free and reduced meal, 0 = full price; [2]Ranges from (1) 1st generation (child and parents are born abroad) to (4) 3rd generation (child and parents are both U.S. born); [3]1 = male; 0 = female.

* $p < .05$, ** $p < .01$.

Table 2. Private Regard and School Connectedness Predicting AIMS Reading Scores ($N = 436$)

	β	R^2	R^2 Change	F Change	Df
Step 1: Age	-.05	.02	.01	1.71	418
Lunch Status[1]	-.27†				
Generational Status[2]	.02				
Sex[3]	-.18†				
Step 2: School Connectedness	.17**	.05**	.03**	4.01**	417
Step 3: Private Regard	.24**	.09**	.07**	6.53**	416
Step 4: School Connectedness x Private Regard	-.1*	.10**	.08**	6.38**	415

[1]1 = free and reduced meal, 0 = full price; [2]Ranges from (1) 1st generation (child and parents are born abroad) to (4) 3rd generation (child and parents are both U.S. born); [3]1 = male; 0 = female.
† <.10, * $p < .05$, ** $p < .01$.

Table 3. Private Regard and School Connectedness Predicting AIMS Math Scores ($N = 436$)

	β	R^2	R^2 Change	F Change	Df
Step 1: Age	-.05	.01	.01	1.64	418
Lunch Status[1]	-.26†				
Generational Status[2]	-.10†				
Sex[3]	.02				
Step 2: School Connectedness	.17**	.05**	.04**	4.13**	417
Step 3: Private Regard	.15**	.06**	.05**	4.81**	416
Step 4: School Connectedness x Private Regard	.07	.07**	.06**	4.55**	415

[1]1 = free and reduced meal, 0 = full price; [2]Ranges from (1) 1st generation (child and parents are born abroad) to (4) 3rd generation (child and parents are both U.S. born); [3]1 = male; 0 = female.
† <.10, * $p < .05$, ** $p < .01$.

Figure 1. School Connectedness Interacting with Ethnic Private Regard as a Predictor of Standardized Test Scores in Reading