

# Examining the Impact of Acculturation and Perceived Social Support on Mathematics Achievement Among Latino/a High School Students

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The current migration of Latino/as into the United States has many schools struggling to meet the unique academic needs of this particular group of students. Previous research suggests level of acculturation and perceived social support impact mathematics achievement amongst Latino/a students. The current study employed hierarchical and simultaneous multiple regression analyses to evaluate the effect perceived social support and level of acculturation reported by a sample of Latino/a students (ages 14-18) had on their mathematics achievement. The results revealed that one's level of acculturation did not impact her or his mathematics achievement, while positive correlations between teacher and peer support and mathematics achievement were noted, with teacher support being the dominant factor. Limitations and implications of the findings for the field of school psychology are discussed.

Latin America has been the leading source of immigration into the United States, accounting for over 20% of the legal immigration into the country during 2001 (U. S. Census Bureau, 2003). It is projected at least 20 to 25 million persons of some type of Latino/a background (i.e., Mexican, Cuban, Puerto Rican, Central American, or South American), whether native born or immigrant, will live in the United States by the year 2050 (U.S. Census Bureau, 2003). Furthermore, by 2030, Latino/a students are expected to comprise 23% of the total American school population, with the majority residing in the border states of Arizona, California, Texas, and New Mexico (White House Initiative on Educational Excellence for Hispanic Americans, 2003).

Students of Latino/a origin continue to lag behind their counterparts of other ethnic backgrounds in terms of overall academic achievement. Indeed, they often demonstrate a lower rate of graduation than students from any other ethnic group, being two to three times more likely to drop out (pushed out) of school than their African American or Anglo peers (Adam, 2003; Gándara, Larson, Rumberger, & Mehan, 1998; Office of Educational Research and Improvement, 1997). Given the large numbers of Latino/a students already in many schools, and the even larger number who are expected to enroll within the next few years, school personnel have begun to wonder about the difference between a Latino/a student who is able to succeed academically and one who is not able to do so.

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## ACCULTURATION, SOCIAL SUPPORT, AND ACHIEVEMENT

The primary focus of the present study was to examine social support and acculturation in relation to the level of academic achievement demonstrated by various Latino/a students, particularly in the area of mathematics. The following provides a brief synthesis of relevant scholarship. First, a standardized definition is provided for the term mathematics achievement. Then the various types of social support are discussed, along with the ways they affect mathematics achievement. Next, acculturation is discussed as well as the various ways a student's cultural background can affect her or his academic success.

### Defining Mathematics Achievement

The text, *Ideology and Curriculum* (Apple, 2004), indicates mathematics achievement can be measured in two ways: classroom-based measures (i.e., performance on quizzes, tests, and homework related to the topics studied in the class) and school-based measures (i.e., standardized tests, graduation from the high school, and enrollment in an institution of higher learning). Most scholars agree mathematics achievement is made up of these two major factors; however, classroom-based measures are a better predictor of mathematics achievement since they are measured on a daily basis (Apple, 2004).

### Social Support

Social support is typically defined as the multifaceted methods and structures evident in people's lives that allow them to feel accepted and a part of the larger community (Gillock & Reyes, 1999; Hale, 2005). Students with higher perceptions of social support also appear to have greater levels of academic success (Delgado-Gaitan, 2004; ERIC Development Team, 1997; Gillock & Reyes, 1999; Gregory, 2003; Hale, 2005; Jones & Velez, 1997; Sikkinik & Hernandez, 2003). In short, it would appear the more social support a student perceives, the higher the levels of academic success she or he manifests. It seems social support within the literature is really divided into three different types: support in the schools, community, and family (Delgado-Gaitan, 2004; ERIC Development Team, 1997; Gillock & Reyes, 1999; Gregory, 2003; Hale, 2005; Jones & Velez, 1997; Sikkinik & Hernandez, 2003). In the following section, the three types of social support will be discussed in reference to Latino/a students, in particular.

*Social support within the schools* relates to the level of cultural awareness demonstrated by teachers, faculty, and curricula within the schooling process, and the degree to which these sources of social support are able to aid students. Social support of Latino/a students in the schools is one type of support that becomes important to mathematics achievement (ERIC Development Team, 1997). Numerous studies (e.g., Black, 1998; Gandara et al., 1998; Gillock & Reyes, 1999; Ibañez, Kupermine, Jurkovic, & Perilla, 2004; Office of Educational Research and Improvement, 1997) have shown when Latino/a students are being supported directly in the school environment through the implementation of programs and curricula that are more culturally relevant, they begin to achieve more academic success. One of the most effective ways to demonstrate this type of social support may be to place the needs and the strengths of the students as the top priority. In a study of six high schools in California and Arizona that received recognition for promoting effectively high levels of mathematics achievement amongst Latino/a students, it was discovered the schools worked continuously from a strengths-based model and they sought to fulfill adequately the needs of their students (Rólon, 2003). For instance, they attempted to build the English and Spanish skills of both Latino/a students who were English-language learners and those who were of Latino/a descent but who did not speak Spanish by actively building bilingualism into the curricula of both general education classrooms and higher-level classes like advanced placement and honors classes (Rólon, 2003). One also finds higher levels of mathematics achievement when the pedagogy of the teachers reflects and respects the cultural aspects of Latino/a students. Research has shown a teacher who attempts to use culturally-relevant pedagogy is better able to use a student's background knowledge to connect new learning with her or his own personal experiences (Black, 1998; Brooks & Brooks, 1999; Cooper, Denner, & López, 1999; Rólon, 2003). One way this connection is accomplished is through the educational practice of cultural constructivism. In this teaching method, the classroom is student-centered and all learning takes place with the student in mind. Research has shown teachers who

have switched to this type of teaching technique raise their students' grades an entire letter, on average (Brooks & Brooks, 1999). Students in these classrooms also report they learn more because they are able to connect unfamiliar concepts they are learning to their own culture (Brooks & Brooks, 1999).

*Social support within the community* concerns the messages of self-worth and belonging students gain from organizations within the Latino/a community, which also seems to play a role in the mathematics achievement of Latino/a students. This type of social support differs from school social support because it concerns the messages sent to children from the larger community that exists around them (Sikkinik & Hernández, 2003). These messages come in the form of cultural values, customs, and attitudes that are taught to young people who identify as Latino/a, and their feelings of belonging and self-worth that result. One of the most dominant of these types of social support comes in the form of religion. Latino/as, as a cultural group, are characterized as being deeply religious (Sikkinik & Hernández, 2003). Therefore, religious institutions create many support opportunities for those persons who do identify as being deeply religious. Congregations often provide field trips for young members. Youth groups may organize trips to athletic events or museums (Sikkinik & Hernández, 2003). Furthermore, religious institutions allow Latino/a youths to have access to other adults, who often have their interests at heart, and who may provide advice to them. These types of factors often mean Latino/a youths who are involved in some kind of religious organization are more likely to demonstrate overall academic success in the form of higher grades and fewer absences (Sikkinik & Hernández, 2003).

Another type of communal social support mentioned in the research, and found within the Latino/a community, concerns organizations interested specifically in the roles and rights of Latino/as (Gregory, 2003; Schwartz, 2001). These include organizations like LULAC (League of United Latin American Citizens), National Chicano Health Organization, and La Raza Unida Party. These organizations create programs that seek to help Latino/a students become more successful both in their personal or professional lives, such as through after-school programs in communities with a high Latino/a presence (Gregory, 2003). Students who have such communal social support are less likely to become involved in gangs, to use drugs, and to become teenage parents, all factors that have been shown to effect negatively overall academic achievement (Gregory, 2003; Romo, 1998; Schwartz, 2001). Examples such as those above illustrate how strong communal support may help Latino/a students' academic success. One way to measure the degree to which students feel they have such communal social support, may come in the extent by which they feel they can identify with the larger Latino/a community and can accept, or at least understand, their cultural values and customs (Gillock & Reyes, 1999; Office of Educational Research and Improvement, 1997).

*Familial social support* has to do with the messages of approval and the degree of support Latino/a students feel they gain from members of their own families (Delgado-Gaitan, 2004; Gillock & Reyes, 1999). The literature reveals support within many traditional Latino/a families is a highly reciprocal relationship in which the welfare of the family often towers over and supersedes personal aspirations for all members of the family, including the children (Delgado-Gaitan, 2004; Schmitz, 2006). This idea can be found in Latino/a youths' perceptions of familial support. Research indicates Latino/a children are more apt to place the values of their parents in high regard, often over their own personal aspirations (Cooper, Denner, & Lopez, 1999; Delgado-Gaitan, 2004; Jones & Velez, 1997). In studies, Latino/a adolescents have been shown to respect and follow the opinions of their parents to a higher degree than either their Anglo or African American peers (Delgado-Gaitan, 2004; Jones & Velez, 1997). This general finding suggests if family members think formal school-based education is important, children are more likely to think it is important, as well. Additionally, they are more likely to reflect their parent's attitudes concerning things like occupational goals and spiritual beliefs (Delgado-Gaitan, 2004). For instance, a recent survey of high school sophomore students who expressed interest in college found nearly three-quarters indicated their parents were the most important or a very important factor in their decision to attend college (Gillock & Reyes, 1999).

## **Acculturation**

There are various definitions of acculturation; however, there do seem to be overarching themes upon which most scholars agree. Thus, the best way to explain acculturation is as a process of change persons of one culture must undergo in order to modify their way of life as a result of contact with another culture (Ibañez, Kupermine, Jurkovic, & Perilla, 2004; López, Ehly, & García-Vázquez, 2002; Martinez, DeGarmo, & Eddy, 2004). This process is understood to be bidimensional, in which individuals adjust at varying levels and varying degrees to the cultures through which they are exposed (Beery, 2003). The process of acculturation may occur over an extended period of time and it can take longer than one generation to occur. For instance, even if a child of Mexican identity is born and raised in the United States, she or he may still manifest a large number of cultural characteristics typically viewed as Mexican if her or his parents experience a low level of acculturation (Ponterotto, Casas, Suzuki, & Alexander, 2000).

One of the most obvious ways primary differences in culture make themselves felt is through the linguistic background of the student. As research reveals, a positive relationship exists between the student's familiarity with language and her or his academic performance in mathematics (Martinez et al., 2004; Ponterotto et al., 2000). Namely, the more familiarity the student has with the English language, the more likely she or he is to experience higher levels of academic success (Martinez et al., 2004; Ponterotto et al., 2000). The issue of language can affect the educational lives of Latino/as in startling ways. Students may find they are being placed into classes that ignore their language needs for educational ones or vice-versa. In truth, said students may appear to be segregated from the rest of the student population as a result of their English language abilities (Sadker, Sadker, & Zittleman, 2007). They may feel ostracized and that they are not a viable part of the schooling process. Latino/a students who are unable to gain a mastery over the English language often may also become frustrated with their educational experiences and simply give up (Lichter & Landale, 1995; Schwartz, 2001). The views of the dominant society have a role in what is occurring, as well. Many areas within the United States have begun passing "English-only laws." If these types of laws are fully implemented in the schools, it could mean students who are already having a difficult time gaining access to education could be further denied their cultural rights (Ochoa, 2004; Ponterotto et al., 2000).

At another level, the cultural differences seem to relate to the outcomes that occur as a result of the primary differences. As Ibañez et al. (2004) point out, this phenomenon could make itself manifest in the opposition by some students of color, in general, to the dominant, majority, middle-class schools that exist in society. Latino/a students also seem to demonstrate this opposition at times (Ibañez et al., 2004). Students may feel they do not have a stake in the educational process if it does not seem to reflect any of their dominant cultural characteristics (Ponterotto et al., 2000). These secondary cultural differences can also make themselves evident in other ways. For example, students who have English language difficulties, and are summarily ostracized, may feel they are not fully integrated, or supported within the school. López et al. (2002) found students who were highly integrated into the school, who felt as if they were a part of it, viewed education positively, and who were able to take advantage of resources afforded to them "were found to have higher academic success" (p. 254). Indeed, students who feel as if they are an active part of the school are more likely to become involved in activities and have more of a vested interest in their own education. Likewise, those students who do not feel like they are actively involved in the schooling process are more likely to report feeling they are castoffs and that others will not care or notice if they are unsuccessful in their schooling (Ochoa, 2004; Rumberger & Larson, 1998). These types of facts may explain why students who are English Language Learners often have the lowest rate of school participation and also have one of the highest dropout rates (Ochoa, 2004).

## THE PRESENT STUDY

The present study aims to advance our understanding of the relationship between various levels of acculturation, social support, and mathematics achievement among Latino/a freshmen and sophomore high school students. The specific question addressed was: to what degree do acculturation status and perceived levels of social support among Latino/a students affect their mathematics achievement? It was hypothesized that: (1) Latino/a students with higher rates of perceived social support would demonstrate higher rates of mathematics achievement; (2) Latino/a students who endorse higher levels of acculturation would demonstrate higher rates of mathematics achievement.

## METHODS

### Participants

Participants in this study consisted of 77 Latino/a 9<sup>th</sup> and 10<sup>th</sup> grade students, ages 14-18, enrolled in algebra and geometry classes in a Title I high school located in the Southwestern United States. The students came from four different mathematics classes taught by four different teachers. The students were chosen a variety of backgrounds in order to get a representative sample that reflects the larger population found within the school itself. The participant sample was comprised of 53% female ( $n = 41$ ) and 47% male ( $n = 36$ ) students. All of the participants self-identified themselves as “Hispanic American.” Of the student participants, 32% were born in Mexico ( $n = 24$ ) and 68% were born in the United States ( $n = 52$ ). With regards to the students who were born in the United States, 61% were identified as 2<sup>nd</sup> generation, with either parent being born in Mexico ( $n = 47$ ), 3% were classified as 3<sup>rd</sup> generation, with the participant being born in the United States, both parents being born in the United States and all grandparents born in Mexico ( $n = 2$ ), and 39% being labeled as 4<sup>th</sup> generation with both the participant and their parents being born in the United States and at least one grandparent being born in Mexico ( $n = 3$ ). Of the students participating, 25% ( $n = 19$ ) had a mathematics course grade of “A,” 43% ( $n = 33$ ) had a course grade of “B,” 21% ( $n = 16$ ) had a course grade of “C,” 9% ( $n = 7$ ) had a course grade of “D,” and 2% ( $n = 2$ ) had a course grade of “F.” Table 1 summarizes the mathematics achievement of the students involved in the study.

**TABLE 1.** *Mathematics Achievement of Study Participants*

Course Grade	n	% of Students	# of Female	# of Male	English	Spanish	Bilingual
A	19	25	12	7	7	9	8
B	33	43	24	9	9	6	5
C	16	21	5	11	4	3	3
D	7	9	0	7	2	2	4
F	2	2	0	2	6	5	4
Mean Course Grade							82.73

Note: A = 90-100%; B = 80-89%; C = 75-79%; D = 74-70%; F = less than 69%

### Measures

*Mathematics achievement.* Mathematics achievement was measured using classroom-based measures, such as homework and exams. The student’s classroom teacher provided this information to the examiner. Students who received grades of “C” or better (75% or greater) were considered academically successful in the area of mathematics and those who demonstrated grades below a “C” were considered academically unsuccessful in the area of mathematics, reflecting the level of proficiency the school requires to demonstrate mastery, and therefore, academic success.

*Perceived Social Support: The Child and Adolescent Social Support Scale (CASSS)* (Malecki, Demaray, & Elliot, 2004) was administered to assess perceived social support on the part of the participants from parents, teachers, classmates, close friends, and other people in the school. The CASSS consists of 60 items that are each rated twice. Items are first rated on how often the type of social support (i.e., support from parents, teachers, close friends, or other people in the school) occurs (frequency) using a Likert-type scale ranging from 1 (*never*) to 6 (*always*). The items are then rated on the importance of each type of social support using a scale ranging from 1 (*not important*) to 3 (*very important*). The CASSS has demonstrated strong reliability and validity (Demaray, 2003; Demaray & Malecki, 2003).

*Acculturation:* Student acculturation was measured using the *Acculturation Rating Scale for Mexican Americans Version 2 (ARSMA-II)* (Cuéllar, Arnold, & Maldonado, 1995). This instrument contains 48-items and it is purported to measure information on a Likert-type scale with 1 being (*not at all*) and 5 being (*extremely/almost always*). There are two scales associated with the measure. The first scale, which is comprised of 30 items, looks at the student's identity orientation. The second scale, composed of 18 items, looks at the marginality experienced by the student. The psychometric properties demonstrate acceptable reliability and validity (Cuéllar et al., 1995).

### Procedures

All of the students who had provided a completed assent form and a signed parental informed consent form were then given the CASSS and the ARSMA-II as a whole group during their regularly scheduled math classes. The CASSS and ARSMA-II were both given on the same day. This procedure was followed to prevent the issue of students completing one test but being absent for the other. To aid accurate answering, participants were given cover sheets while they responded to the various questions on the scale. This strategy was meant to stop participants from, for instance, copying their answers from a neighbor so they could finish quickly and without much effort. This effort was also meant to prevent participants from feeling pressure to respond in the same manner as their neighbors and friends instead of responding honestly. Additionally, participants were not allowed to talk during the administration of study protocols.

In order to make sure all participants were able to engage fully in the study, all materials were provided in both English and Spanish.

### Statistical Analyses

A hierarchical regression was used to examine the extent to which a participant's level of acculturation affects her or his mathematics performance. Along with this process, when examining the social support subscales of frequency, a simultaneous multiple regression analysis was used in which the subscales of parent, teacher, classmate, school, and close school friend social support were studied simultaneously to see if these types of social support predict mathematics achievement.

## RESULTS

### Primary Analysis

A hierarchical regression analysis was conducted to examine the extent to which a student's level of acculturation affected their mathematical achievement. The results of the ARMSA-II showed that 47% of the total sample of students scored at level I ("very Mexican-oriented";  $n = 36$ ), 29% fell into level 2 ("Mexican-oriented" to "approximately balanced bicultural";  $n = 22$ ), 19% reflected level 3 ("slightly Anglo-oriented bicultural";  $n = 15$ ), 4% were classified as level 4 ("strongly Anglo-oriented";  $n = 3$ ), and 1% were identified as level 5 ("very assimilated, Anglicized";  $n = 1$ ). The acculturation types of the students in the sample were as follows: 43% were classified as traditional ( $n = 33$ ), 12% were identified as integrated bicultural low ( $n = 9$ ), 36% were integrated bicultural high ( $n = 28$ ), and 3% were classified as assimilated ( $n = 2$ ). Of the sample, 6% did not fall into any category ( $n = 5$ ). Table 2 illustrates the participants' levels of acculturation in reference to their mathematics achievement.

A simultaneous multiple regression analysis was conducted to examine the association between so-

cial support predict and mathematics achievement. The results of the CASSS show the average parental support recorded by the participants was a score of 4 (*most of the time*), the average teacher support reported was 4 (*most of the time*), the average classmate support demonstrated by the participants stood at 4 (*most of the time*), the average support of close friends was reported as 5 (*almost always*), and the average support of generalized people within the school was reflected in the protocol as 3 (*some of the time*). It should be noted the level of importance was not observed in the study since the focus of the research was whether student participants felt they had social support within their lives and how this support affected their mathematics achievement. Both the average perceived support of students in relation to mathematics achievement and the average perceived support of all students are summarized in Table 3.

The set of predictors studied was Anglo Orientation, Mexican Orientation, and social support. These were correlated to the students' mathematics achievement (semester course grade); however, the only predictor that demonstrated any significance was social support.

**TABLE 2.** *Level of Acculturation and Mathematics Achievement*

Level	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
		A course grade	B course grade	C course grade	D course grade	F course grade
1	36 (47)	11 (31)	13 (36)	3 (8)	5 (14)	4 (11)
2	22 (29)	4 (18)	11 (50)	2 (9)	3 (14)	2 (9)
3	15 (19)	3 (20)	7 (46)	1 (7)	1 (7)	3 (20)
4	3(4)	1 (33)	1 (33)	1 (33)	0	0
5	1(1)	0	1 (100)	0	0	0

**Post-hoc Analysis**

The post-hoc analysis examined the individual support scales within the CASSS scales (i.e., parent, teacher, classmate, close friend, and systemic school support). In the ARSMA, the Anglo Orientation and Mexican Orientation were looked at separately. When looking at the Anglo Orientation, the respondent profiles produced a correlation of -.006 while a correlation of .128 emerged from the participant response profiles related to the Mexican Orientation; the significance in each case stood at .962 and .266 respectively. The participant response profiles also produced significant acculturation levels of .855 for the Anglo Orientation and -.713 for the Mexican Orientation.

When looking at the responses on the CASSS correlations with social support were as follows: parent support (.214), teacher support (.433), support of classmates (.126), close friends support (.225), school support (.204) and the overall social support (.324).

**DISCUSSION**

The high Anglo Orientation and Mexican Orientation scores on the ARSMA indicate the student participants were often heavily acculturated in either the Mexican or Anglo system. Very few participants appeared to be bicultural (i.e., reflecting aspects of both cultures). For instance, participants would say they enjoyed reading in Spanish or in English, with very few saying they liked reading in both languages. Many of the participants reflected a high level of acculturation toward the Mexican system (only two students identifying themselves as assimilated into the American system). As indicated above, nearly 1/3 of the students involved in the study were born in Mexico. Also, of those students who were born in the United States, more than 1/2 identified as having at least one parent who had been born in Mexico. As a result, many of the study participants may have been acculturated toward the Mexican system.

In reference to mathematics achievement, it appears the participants' levels of acculturation were not associated with their semester course grades. This finding may due to the observation that many of the cooperating teachers seem to be readily able to understand and reflect the dominant aspects of both

cultures within the classroom. As the literature suggests, when students who are not of the dominant culture have teachers who can both speak their home language and reference their home culture, students experience more academic success (Adam, 2003; Black, 1998; Cooper et al., 1999; Gándara et al., 1998; Ibañez, 2004; López et al., 2002; Martínez & DeGarmo, 2004; Ochoa, 2004; Office of Educational Research and Improvement, 1997; Rolón 2003; Rumberger & Larson, 1998; Schwartz, 2001). The vast majority of the teachers within the mathematics department (i.e., 9 out of 10) were Latino/a whom had grown up in the local area. Thus, in this study, language and culture do not seem to have a large effect on a student's ability to succeed academically, with high Mexican-oriented students having the same chance of academic success as other class members.

Teacher and friend support was significantly correlated in a positive direction with the student's semester course grade; however, of the two, teacher support seems to be the most dominant predictor, accounting for 20% of the variance within the study. Indeed, teacher social support seems to be such a strong predictor that it influences the others predictors on the CASSS. Thus, those students who feel a great deal of teacher support demonstrated more positive feelings toward the schooling process. As suggested in the literature, these positive feelings may result in higher mathematics achievement since the school feels like a welcoming place where the student experiences success (Apple, 2004; Gándara et al., 1998; Martínez, 2004; Sadker et al., 2007; Schmitz, 2006).

The literature also suggests those students who experience little academic success within the school setting are less likely to feel supported (Delgado-Gaitan, 2004). Students may not feel ownership in the schooling process, viewing it as a foreign place where they have neither garnered happy memories and where they may often feel they do not belong, causing them to be less vested and feel less supported (Adam, 2003; Apple, 2004; Gándara et al., 1998; Gillock, 1999; Martínez, 2004; Sadker et al., 2007; Schmitz, 2006). This phenomenon appears to be reflected in the results of the current study, as participants who experienced academic success (grades of "A" or "B") reported support scales of 5 (*almost always*) in more than half of the areas measured, however, participants who were the least successful (grades of "F") endorsed average support scales of 3 (*some of the time*) in three out of five scales. When describing support from the entire school organization, these participants reported an average score of 2 (*almost never*), suggesting they viewed school as a place that provided little support. Indeed, the only scale where they reported a 4 (*most of the time*) was when looking at support provided by close friends.

**TABLE 3.** *Perceived Social Support and Mathematics Achievement*

Semester Course Grade	Avg. Parent Support	Avg. Teacher Support	Avg. Classmate Support	Avg. Close Friend Support	Avg. School Support
A	5	5	4	5	4
B	5	5	4	5	4
C	4	4	4	5	4
D	4	4	4	4	3
F	3	3	3	4	2
All Students	4	4	4	5	3

5 = almost always, 4 = most of the time, 3 = some of the time

### **Potential Implications Considering Relevant Scholarship**

Considering the findings of this study and related scholarship, strategies to promote student social support may help to facilitate academic achievement. Previous research reports that those who are placed into programs in which an attempt is made to enlist the three major areas of support (i.e., home, school, and community) show greater academic success, including the field of mathematics (Gándara et al., 1998; Office of Educational Research and Improvement, 1997). This increased opportunity for success is evident in programs like AVID (Advancement via Individual Determination) and the Los Angeles-area based ALAS (Achievement for Latino/as through Academic Success), which have shown notable results in terms of raising the levels of mathematics achievement for Latino/a students (Gándara et al., 1998; Office of Educational Research and Improvement, 1997). In the ALAS program, the school, student, and family are counseled and educated on ways to best help the student gain ownership over her or his education and to manifest behaviors that will facilitate academic success in areas such as reading, science, and mathematics (Gándara et al., 1998 & Office of Educational Research and Improvement, 1997). In one study, at the end of their ninth grade year, 75% of ALAS students were on their way to graduating within a four-year period compared to 44% of non-ALAS students. By the end of their ninth grade year, ALAS students were also half as likely to have failed a class than their non-ALAS peers, who were, in turn, four times as likely to be off-track in their graduation credits (Gándara et al., 1998).

Similar results can also be found with the AVID program (Gándara et al., 1998; Office of Educational Research and Improvement, 1997). In AVID, students who are from low-income backgrounds and who come from a minority ethnic group are transitioned to high-track classes in such subjects as English, social studies, science, and mathematics. Through the program, students are put in contact with colleges and universities (by way of guest speakers and field trips) and educated in academic success techniques. Students are assigned mentors who work as liaisons between the school and the home and also work to create connections for the student in the post-secondary setting (Gándara et al., 1998). As with ALAS, Latino/a students participating in the AVID program also showed high levels of mathematics achievement in the face of such support. AVID students were more than twice as likely as those who were not involved in the program to attend a two-or four-year university and they show college graduation patterns closer to students from higher-income families. In the end, it would appear programs such as ALAS and AVID, which work to bring aspects of home, community, and school support together in a meaningful way, create more academic success in the lives of Latino/a students, including success in the field of mathematics (Gándara et al., 1998; Office of Educational Research and Improvement, 1997).

### **Limitations of the Study**

The sample is unique for several reasons. Rather than representing various Latin American countries, 100% of the participants in the study reported as identifying as Mexican or Mexican American. Along with this observation, given the fact the school from which the sample was drawn is from a large metropolitan area situated along the border between the U.S. and Mexico, the particular participants included in the study may be more exposed to their Mexican heritage on an ongoing basis than students from other Latino/a backgrounds. In addition, the vast majority of the cooperating teachers (i.e., 9 out of 10) identified as being of Mexican origins themselves. The uniqueness of this sample creates a limitation in that it is hard to generalize the results to a broader population.

Another limitation concerning the current research concerns the focus on mathematics achievement exclusively. In order to measure truly mathematics achievement, a broader study involving student achievement across a variety of disciplines may be more appropriate. There may have been participants in the study who did not experience academic success in mathematics but experienced success in other subject areas and vice-versa.

### **Future Research**

Future studies may focus on students who live away from the border as well as those who live directly on the border. One could explore parts of the country where large percentages of students of Latino/a backgrounds can be found, such as in the Chicago-area, southern California, and major cities

along the east coast of the United States. Also, future research could focus on Latino/a students from a variety of backgrounds as well as students of other ethnic backgrounds (e.g., African American, Asian, White) and the extent to which they differ across race/ethnicity.

### Implications for School Psychologists and School Psychology Practice

One major implication relates to the importance of social support within the lives of students. As the results suggest, those participants who did not feel supported in their lives were also those who did not perform well within the classroom. School psychologists may advocate strategies to help students feel they are supported within the academic setting. In daily practice, this support may come in the form of consultation with teachers and administrators to show them strategies to help students better perceive school personnel are looking out for their best interests. It may also be important to consult with parents to help them develop strategies that provide the same type of support within the home setting. This support may also come in the form of in-service presentations, which can help school personnel to see the importance of perceived social support within the lives of students.

The study may also portend the importance of cultural competence within the academic setting. The results of the study demonstrated that participants who had a strongly Mexican orientation were just as likely to be successful as those who did not. The extant literature supports the notion that cultural competence within the classroom has positive affects on student's academic success while ignoring a student's cultural heritage has a negative impact upon the student (Adam, 2003; Black, 1998; Cooper et al., 1999; Gándara et al., 1998; Ibañez, 2004; López et al., 2002; Martinez & DeGarmo, 2004; Ochoa, 2004; Office of Educational Research and Improvement, 1997; Rolón 2003; Rumberger & Larson, 1998; Schwartz, 2001). School psychologists may serve as agents of change by bringing the results of research into the schools and actively incorporating them into practice. By helping to promote knowledge, awareness, and of cultural competence among teachers, administrators, and other educational service providers school psychologists may be playing an important role in helping Latino/a students experience academic success.

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