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## A Prospective Study of Mexican American Adolescents' Academic Success: Considering Family and Individual Factors

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### Abstract

Mexican American youth are at greater risk of school failure than their peers. To identify factors that may contribute to academic success in this population, this study examined the prospective relationships from 5<sup>th</sup> grade to 7<sup>th</sup> grade of family (i.e., human capital [a parent with at least a high school education], residential stability, academically and occupationally positive family role models, and family structure) and individual characteristics (i.e., externalizing symptoms, bilingualism, gender, and immigrant status) to the academic performance of 749 Mexican American early adolescents (average age = 10.4 years and 48.7% were girls in 5<sup>th</sup> grade) from economically and culturally diverse families as these youth made the transition to junior high school. Results indicated that while controlling for prior academic performance, human capital and positive family role models assessed when adolescents were in 5<sup>th</sup> grade positively related to academic performance in 7<sup>th</sup> grade. Further, being a girl also was related to greater 7<sup>th</sup> grade academic success, whereas externalizing symptoms were negatively related to 7<sup>th</sup> grade academic performance. No other variables in the model were significantly and prospectively related to 7<sup>th</sup> grade academic performance. Implications for future research and interventions are discussed.

### Keywords

Academic performance; bilingualism; human capital; mental health; Mexican Americans; role models

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Educational attainment in Latino youth is a serious concern. Although most Latino students are successful in school (e.g., Cavazos et al., 2010; Perez, Espinoza, Ramos, Coronado, & Cortes, 2009), about 20% drop out of high school before graduation, significantly surpassing African Americans (8%) and European Americans (5%; U.S. Department of Education, 2007). Low educational attainment is costly to the individual and society. Latinos without a high school degree earn about \$5000 less annually and are more likely to live in poverty than those with a high school degree (U.S. Census Bureau, 2005). Poor academic performance also is related to higher rates of delinquency, involvement with drugs and violence, unstable employment, poverty, and increased risk for mental health disorders in adulthood (Bridgeland, Dilulio, & Morison, 2006; Kaplan & Damphouse, 1994). Unfortunately, relatively few factors that explain the diversity in educational success within the Mexican American population have been identified. Given the costly implications of school failure, we must learn more about contributors to Latinos' educational successes in

order to reduce the educational disparity for this population. One way of accomplishing this is to identify factors that begin to explain variations in academic performance within this population to guide the development of preventive interventions that can reduce the education disparity of this group (Sandler, Wolchik, MacKinnon, Ayers, & Roosa, 1997).

The current study focused on Mexican Americans, a group that constitutes almost two-thirds (65.5%) of the US Latino population and which has the lowest level of educational attainment among Latinos (U.S. Census Bureau, 2010). Guided by the integrative model of developmental competencies of minority children (García Coll et al., 1996), we examined a broad array of factors thought to promote educational success as well as an often overlooked factor, externalizing behaviors, that is considered a threat to educational success. The integrative model stresses the importance of assessing how contextual variables such as social class, culture, and ethnicity influence development. According to this model, minority children's development is affected by most of the same factors that influence development in the majority population as well as by factors unique to their experience as minorities in a larger sociocultural context. Further, the integrative model suggests that studies on minority youth need to utilize longitudinal designs, assess intra-group variability, include family and cultural variables, and focus more on factors that promote resiliency as opposed to the use of deficit models. Because Mexican American youth display such a diversity of educational outcomes, the use of designs that focus on variability in academic success within this population are particularly important for guiding the development of preventive interventions (Knight, Roosa, & Umana-Taylor, 2009).

Thus, this study included family and individual factors that generally have broad support as predictors of children's academic success as well as bilingualism and immigrant status, factors only relevant to the educational experiences of minority groups that include significant numbers of immigrants. This study used a multivariate approach to examine the prospective relationships (over a two-year period beginning when children were in 5<sup>th</sup> grade) of family and individual factors with Mexican American students' academic performance (Figure 1). Examining a prospective model that incorporates multiple influences on academic outcomes allows greater confidence in causal inference than cross-sectional, non-multivariate approaches that fail to account for the simultaneous effects of each predictor over and above the influence of all other predictors in the model. Finally, this study examined the relative importance of predictors of academic success within a diverse Mexican American sample as the early adolescents were making the transition to junior high school, a particularly important developmental period with long term implications for academic success, mental health, and delinquency (e.g., Azmitia & Cooper, 2001; Barber & Olsen, 2004). We believe this is the first study to investigate these family and individual, including cultural, predictors of academic success of Mexican American youths over this sensitive developmental period.

## Family Characteristics

This study focused on human capital, positive family role models, residential/school stability, and family structure as variables that have been shown to be correlates of children's academic success. Human capital, the resources humans acquire (e.g., education, job skills, work experience; Parcel, Dufur, & Zito, 2010; Portes & Fernandez-Kelly, 2008) that contribute to their ability to be productive members of society, often is represented by parental education. Human capital positively influences the quality of children's home environments in ways that enhance their academic success (Magnuson, 2007). Human capital provides parents with an awareness of the value of an education, the general knowledge of what it takes to succeed in school, and skills to interact effectively with the members of their children's school (Coleman, 1988; García Coll et al., 2002; Johnson,

Crosnoe, & Elder, 2001). Research has shown that parents who have completed at least a secondary education, whether in the US or Mexico, generally are well prepared to guide their children through the education system (Jensen, 2007; Perez et al., 2009). Parental education has been associated with school success for Latinos at all academic levels (e.g., Fuligni, 1997; Jensen, 2007; Lopez, Gallimore, Garnier, & Reese, 2007). Interestingly, research also has shown that the effect of parental education on children's school success may not be significant until parental education reaches at least the level of high school completion in either the US or Mexico (Jensen, 2007; Perez et al., 2009); until that level, parents may not have accumulated enough human capital to provide the educational guidance and support that children need. Therefore, in keeping with the concept that human capital represents resources that one needs to be successful in life, we hypothesized that human capital (e.g., a parent with at least a high school education) would be positively related to Mexican American children's school performance.

A family-level factor that may be particularly relevant during adolescence is family role models. According to social cognitive theory, most behavior is shaped through modeling others (Bandura, 1997). Further, adolescents in general are most likely to be influenced by role models within their families (Saner & Ellickson, 1999). Mexican American youth, particularly, may rely on family members as role models, consistent with *familism values*, which embody the centrality of the family unit through obligations to and support from nuclear and extended family members (Marín & Marín, 1991). While parents, through their education and career successes, serve as role models for children's academic efforts, non-parental family role models' educational and career accomplishments also would contribute to children's academic success. In cultural groups like Mexican Americans where close relationships often exist with extended family members, relatives' academic and career successes not only make them positive role models for academic success but may also provide additional human capital for children to draw (e.g., sources of advice for negotiating the educational system and support for academic success; Cavazos et al., 2010; Stanton-Salazar, 2001). Including extended family role models as a positive influence on children's academic success is consistent with García Coll and colleagues' (1996) recommendation for including the influences of extended kin in studies of minority youth because they have been shown to be a significant part of minority youth's development. We hypothesized that family role models of academic and occupational success would contribute positively to Mexican American children's academic success.

Another family-level factor included in this study was residential/school stability. Latinos are one of the most mobile groups in the US, being about 50% more likely to move to different residences than European Americans (U.S. Census Bureau, 2010). Such mobility likely means that children in Latino families are changing schools more frequently than their peers. Students who remain in the same school generally do better academically than those who are mobile; more mobile students in general tend to have poorer reading and math scores (Mantzicopoulos & Knutson, 2000) and an increased risk of school dropout (South, Haynie, & Bose, 2007). Students who move frequently encounter disruption in their school experiences due to the lack of continuity in content, disruption in social ties, and feelings of alienation (Engel, 2006). Thus, we hypothesized that residential/school stability would relate positively to Mexican American children's academic performance.

Research also shows that immigrant children who live with both biological parents do better in school than their peers living in other family structures (Portes & Fernandez-Kelly, 2008; Suarez-Orozco et al., 2010) but we could not find studies that included family structure as a predictor of academic success for Latinos generally or Mexican Americans specifically. Given the centrality of the family to Mexican Americans (e.g., Marín & Marín, 1991) and the likelihood that children in these families see their families as the primary source of

support (Knight et al., 2010), it is likely that growing up in an intact family would be an important resource for these adolescents as they attempt to succeed in school and other endeavors. Therefore, we looked at whether growing up with both biological parents contributed to Mexican American adolescents' academic success; we hypothesized that adolescents living with both biological parents would show greater academic success compared to peers living with a single biological parent.

## Child Characteristics

Several recent studies have found negative associations between mental health problems, particularly externalizing problems, and academic achievement in children and adolescents (e.g., Galindo & Fuller, 2010; Smith & Smith, 2010; Suarez-Orozco et al., 2010; Suldo et al., 2011). The samples from these studies were comprised of youth from multiple racial and ethnic groups, failing to account for how these relationships may vary depending on racial or ethnic group membership. Importantly, Latino adolescents are at greater risk of displaying externalizing symptoms than most other adolescents (Bird et al., 2001; CDC, 2006; Eaton et al., 2008), making it important to examine how such symptoms relate to academic outcomes in this population. Therefore, it is critical to include this risk factor in models attempting to understand academic success in this population.

An individual characteristic that may be of great importance to the academic success of Mexican American children is bilingualism (Portes & Rumbaut, 2001). In the current sample, about three-fourths of parents and about one-fourth of students were born in Mexico, meaning that there was considerable exposure to two languages for most of the sample. Bilingual children have greater literacy and cognitive skills than their English or Spanish monolingual peers, which gives them an advantage in understanding the content of their courses (e.g., Bialystok, 2007; Chitiri & Willows, 1997). However, evidence of the benefits of bilingualism for the academic success of Latinos beyond elementary school has been inconsistent (e.g., Perez et al., 2009). This inconsistency could be due to differences across studies in their designs (e.g., cross sectional versus longitudinal studies), samples (e.g., samples that are exclusively low-income and urban versus more diverse samples; studies that focus on a single Latino subpopulation versus those that include Latinos from multiple national origins), or measurements (i.e., there is no recognized standard survey measure of bilingualism). Because of this inconsistency, we believe it is important to continue to examine the possible contributions of bilingualism to academic success in Mexican American adolescents. We expected Mexican American adolescents who were more bilingual to have better academic performance than their peers who were more monolingual. In addition, there have been mixed results when it comes to how gender may influence academic success for Mexican American youth. For instance, while one study of Mexican American adolescents reported that girls received higher grades than boys (Updegraff, McHale, Whiteman, Thayer, & Crouter, 2006), others have failed to find such differences for middle school Latino students generally (Waxman, Huang, & Padron, 1997) or Mexican American middle school students specifically (Plunkett, Henry, Houlberg, Sands, & Abarca-Mortensen, 2008; Portes & Rumbaugh, 2001). Because gender differences commonly emerge in several areas of adolescent development beginning around the time children enter junior high school, we thought it was important to continue to explore gender as a possible predictor of Mexican American students' academic success, although we did not hypothesize what relationship gender would have with academic performance.

Similarly, there have been conflicting reports about whether immigrants or native born Latinos perform better academically. Fuligni (1997; 2001) reported that immigrants, both Latinos (mostly of Mexican origin) and others, performed better academically than their native born peers. Plunkett et al (2008), on the other hand, found no difference in the

academic success of immigrants and native born Mexican Americans. Some (Portes & Rumbaug, 2001) have argued that any differences between immigrants and nonimmigrants is due to the age that the immigrants arrived in this country with later arrivals doing better. However, this result is not consistent across studies either (Fuligni, 1997). Because of the potential that immigrant status may contribute to Mexican American adolescents' academic success beyond the contributions made by language, we included it in the model, although we did not hypothesize the outcome. Because age at immigration is a useful construct only in studies exclusively of immigrants, we did not include it in the model.

## Current Study

Based on the integrated model (García Coll et al., 1996), the current study examined a theoretical model of the relationships of several family and individual strengths and one individual risk factor to the academic success of Mexican American adolescents as they made the transition from elementary school to junior high school. This is a particularly important time to test a model of academic success because this transition can be associated with declines in academic engagement and success for many (e.g., Barber & Olsen, 2004; Eccles, 2004). To learn more about contributors to academic success during this critical transition, we tested a prospective multivariate model (See Figure 1) with a diverse sample of Mexican American early adolescents. Adolescents were in 5<sup>th</sup> grade at Time 1 (T1) and in 7<sup>th</sup> grade at Time 2 (T2). We examined the relationships of T1 family factors (human capital, family role models, residential stability, and family structure) and child characteristics (externalizing symptoms, bilingualism, gender, and immigrant status) to T2 academic performance while controlling for the effects of T1 academic performance.

Although prior studies have examined the relationships of many of these variables to academic success in studies that at least included Mexican Americans, testing of the hypothesized model will contribute to our understanding of Mexican American adolescents' academic success in several ways. First, relatively few studies have examined academic success prospectively or at the developmentally important time of the transition to junior high school with this population and those studies that did generally used smaller and less diverse samples than the current study. The prospective and multivariate research design and diverse sample in the current study will provide a stronger test of the predictors in the model than many previous studies and the results are more likely to represent the Mexican American population. Second, several variables in the model are theoretically and/or empirically related to one another (e.g., bilingualism and immigrant status; gender and externalizing symptoms; human capital, residential stability, and family structure) but rarely have been included together in previous studies. Testing of the hypothesized model will help us determine whether these related variables make independent contributions to adolescents' academic success, and, if not, which one may be more useful for understanding the academic success of this population. Third, prior research has produced inconsistent results regarding the utility of many variables among the predictors of academic success. The current study with its prospective design and diverse sample provides an opportunity to replicate previous results and perhaps clarify some of these relationships. Fourth, this study included positive family role models, a variable that should represent a culturally informed contribution from the extended family to the academic success of Mexican American adolescents; we found no other studies of academic success that have included this variable. Finally, the collection of variables included in this study were selected with the idea of identifying family and individual characteristics of Mexican American adolescents who are successful in school and their peers who are struggling and who could benefit from interventions. The results should help us identify those most in need of interventions and some potentially malleable variables to target in preventive interventions to improve

Mexican American adolescents' chances for academic success (Roosa, Wolchik, & Sandler, 1997).

## Method

The data for this study are from the first two waves of a longitudinal study investigating the roles of culture and context in the lives of Mexican American families in a large southwestern metropolitan area (Roosa et al., 2008). Participants were 749 Mexican American students who were in 5<sup>th</sup> grade when the study began and their families (749 participating mothers and 465 participating fathers). To be eligible (a) families had to have a fifth grader attending a sampled school; (b) both mother and child had to agree to participate; (c) the mother was the child's biological mother, lived with the child, and self-identified as Mexican or Mexican American; (d) the child's biological father was of Mexican origin; (e) the child was not severely learning disabled; and (e) no step-father or mother's boyfriend was living with the child (that is, in all two-parent families, fathers were the child's biological father).

In the full sample, 77.1% were two-parent families at T1 and 74.7% at T2. In contrast to the majority of previous studies of Mexican American families, this sample was diverse on SES indicators, generation status, and language. Family income ranged from less than \$5,000 to more than \$95,000, with the average family reporting an income of \$30,001 – \$35,000 at T1 and T2. About 30% of mothers, 23% of fathers, and over 80% of adolescents (48.7% female) were interviewed in English. The mean age of mothers, fathers, and adolescents was 35.9, 38.1, and 10.4 years, respectively, at T1. Mothers and fathers reported an average of 10.3 and 10.1 years of education, respectively. A majority of mothers (74%) and fathers (80%) were born in Mexico, while a majority of adolescents were born in the US (70%).

There were 711 families interviewed at T2 (709 mothers, 418 fathers, and 711 adolescents), two years after T1 data collection. Families who participated in T2 interviews were compared to families who did not on key T1 demographic variables as well as the predictor variables in the hypothesized model. There were no differences on child (gender, age, generation, language of interview) or parent characteristics (marital status, mother and father age, generation, or education).

## Procedures

The complete procedures are described elsewhere (Roosa et al., 2008). Here, we summarize key features of the study. Using a combination of random and purposive sampling, the research team identified communities served by 47 public, religious, and charter schools from throughout a southwestern US metropolitan area that represented the economic, cultural, and social diversity of the community. Recruitment materials were sent home with all children in the 5<sup>th</sup> grade in these schools. Over 85% of those who returned contact information were eligible for screening (e.g., Latino) and 1,028 met eligibility criteria. Computer Assisted Personal Interviews lasting about 2 ½ hours were completed with 749 families, 73% of those eligible. Interviewers read each survey question and response option aloud in the participants' preferred language. Participants were paid \$45 and \$50 each at T1 and T2, respectively.

## Measures

**Demographic Variables**—This study included one family level demographic variable and two adolescent level demographic variables as predictors of academic success. Family structure was assessed using mothers' report of whether they were living with the adolescents' biological father ("0" for single parent family; "1" for two biological parents).

Adolescents' gender ("1" for female; "2" for male) and immigrant status ("0" for Mexico-born; "1" for US-born) were obtained in the mother interview.

**Human capital**—Parents were asked to report the highest level of education (number of years) they completed with responses ranging from 0 (no schooling) to 20 (doctorate or advanced degree); about 46% of parents had at least a high school education including about 6% who had a college degree or higher; if fathers did not participate, mothers reported their partners' level of education. Research suggests that the effect of parental education on children's school success may not be linear and, in fact, may not be significant if parental education is less than high school completion in either the US or Mexico (Jensen, 2007; Perez et al., 2009). Therefore, human capital was operationalized as "0" for parental education less than high school completion (53.7% of families) and "1" for having at least one parent with high school completion or above (46.1% of families); in two parent families, the education level of the parent with the most education was used to create this variable.

**Positive family role models**—The Family Role Models scale was developed for this study to provide information about the amount of positive behavioral models that youths are exposed to within their extended families. For this study, we used 5 items that represented positive role models related to academic and vocational success. Mothers were asked to report the extent to which adults (18 years of age or older) in the immediate (e.g., parents and siblings) or extended family (e.g., cousins, aunts, uncles, grandparents) had experiences such as graduating from high school or full time employment. Mothers responded to statements on a 5-point Likert scale ranging from 1 (*none of them*) to 5 (*all of them*). Higher scores indicate higher numbers of role models. Cronbach's alpha was .91.

**Residential stability**—Mothers reported how long they lived in the home in which they currently resided. Although most mothers reported living in their home for three years or greater (52.3%), a significant number had also lived in their homes for one or two years (28.5%). The fewest number of mothers reported living in their home for less than one year (19.2%). This variable was coded such that those who reported living in their home for less than one year were scored as a "0," one or two years were scored as a "1," and greater than three years were scored as a "3." We use this measure of residential stability as a proxy for school stability although we cannot confirm that residential changes always were associated with school changes.

**Bilingualism**—Bilingualism refers to the *ability* to communicate in two languages. Rather than assess the ability to speak English and Spanish, this study assessed the frequency that students used each language. Children responded to language use items from the Acculturation Rating Scales for Mexican Americans II (Cuellar, Arnold, & Maldonado, 1995). Four items asked how much they used Spanish for speaking, listening to music, watching TV, and reading. Four separate items asked about their use of English for the same purposes. Responses ranged from 1 (*Almost never or never*) to 5 (*Almost always or always*). Reliability for the Spanish and English use subscales were .74 and .71, respectively. To create a score indicating how much they used both languages, we subtracted one score from the other then assigned students who fell within  $\pm 1$  standard deviation from the zero point (i.e., the most bilingual) in the resulting distribution a value of "1" and all others a value of "0". Approximately 47.1% of the adolescents scored a "1" representing relatively balanced usage of each language whereas 52.9% scored a "0" representing limited to no use of a second language. Among those in the bilingual group, only 24 had scores of less than three on either of the language use scales.

**Child externalizing**—Children’s mental health symptoms were assessed using the computerized version of the Diagnostic Interview Schedule for Children (DISC) IV, a reliable and valid structured diagnostic instrument for use by nonclinicians providing both diagnoses and symptom counts (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). The DIS has been successfully translated into Spanish according to work done in Puerto Rico to determine the reliability and validity of the measure with Spanish speakers (Bravo, et al., 1993; Bravo et al., 2001; Ribera et al., 1996). The indicators of externalizing behaviors used were adolescent conduct disorder (CD) and opposition defiant disorder (ODD) symptoms. Given that CD and ODD often co-occur in this age group and that CD is thought of as a precursor to ODD (Hinshaw & Zupan, 1997), these symptom counts were summed into a combined score. The current study used the adolescent reported symptom count for externalizing spectrum disorders.

**Academic performance**—For T1, teachers ranked student’s academic performance relative to others in the classroom because cooperating schools used multiple, incompatible grading methods, a problem that disappeared by 7th grade. Responses ranged from (1) *far below average/the bottom 1/5 of the class* to (5) *excellent/the top 1/5 of the class*. At T2, math and English teachers were asked “if you were giving final grades today, what grade would this student receive in your course?” These reports were averaged.

## Results

### Preliminary Analyses

Table 1 shows Pearson’s correlations, means, and standard deviations for the study variables. Human capital, family role models, residential stability and bilingualism were positively and significantly related to T2 grades. Externalizing symptoms and child gender (boys did less well) were negatively and significantly related to T2 grades. Neither family structure nor immigrant status was significantly related to T2 academic performance. The control variable, T1 academic performance (teacher ranking) was significantly related to T2 grades ( $r = .50$ ;  $p < .001$ ).

### Test of Hypothesized Model

The model was tested using Mplus 5.2 (Muthén & Muthén, 1998–2009). A major advantage of using SEM is that all paths in a theoretical model are estimated simultaneously while controlling for the influence of all other variables in the model. Because the model is fully saturated (i.e., the number of free parameters equaled the number of known values or zero degrees of freedom), fit indices are not meaningful. Full information maximum likelihood estimation was used for handling missing data to yield unbiased parameter estimates when data were missing at random (Arbuckle, 1996; Schafer & Graham, 2002). In this study, students were clustered within schools because of sampling procedures, although all variables were observed at the student level. Ignoring possible clustering effects could lead to underestimated standard errors (Barcikowski, 1981). Therefore, we investigated the potential seriousness of ignoring clustering effects by examining intraclass correlations (ICCs) of each variable in the model within the multilevel modeling framework. Only human capital had a high intraclass correlation (.08); all other variables had intraclass correlations below .05 (average = .02). Even so, possible clustering effects were accounted for in analyses (i.e., standard errors of path coefficients were adjusted) because ignoring clustering can lead to biased estimates (Enders & Tofighi, 2007).

The hypothesized model examined the prospective relationships among (1) human capital (e.g., parental education), (2) family role models, (3) residential stability, (4) family structure, (5) externalizing symptoms, (6) bilingualism, (7) gender, and (8) immigrant status



in the 5<sup>th</sup> grade with teacher reported academic performance in the 7<sup>th</sup> grade controlling for 5<sup>th</sup> grade teacher academic rating. Figure 2 shows results of the path analysis of the hypothesized model with standardized path coefficients and effect sizes. The model, including the covariate T1 grades, accounted for 30.8% of the variance in grades received in 7<sup>th</sup> grade. With T1 academic performance controlled, human capital (positive), family role models (positive), externalizing symptoms (negative) assessed during 5<sup>th</sup> grade, and child gender (females did better than males) were significantly related to children's academic performance during 7<sup>th</sup> grade. Residential stability, family structure, bilingualism, and immigrant status were not significant predictors of grades at T2 when the effects of all other predictors were controlled.

Given the influence on large sample size on determinations of statistical significance, Figure 2 also contains the effect sizes ( $f^2$ ) to better understand the strength of the relationships between each of the statistically significant predictors and academic performance at T2. As expected, the control variable, Time 1 academic performance, accounted for the largest amount of variance in the model ( $r^2 = .19$ ) and had a medium to strong effect size ( $f^2 = .23$ ). Externalizing symptoms accounted for the second highest amount of variance ( $r^2 = .03$ ) and had a small effect size ( $f^2 = .02$ ). Human capital ( $r^2 = .01$ ;  $f^2 = .01$ ), positive role models ( $r^2 = .01$ ;  $f^2 = .01$ ), and gender ( $r^2 = .02$ ;  $f^2 = .02$ ) each accounted for a small amount of variance and had small effect sizes.

## Discussion

Guided by the integrative model of development of minority children (García Coll et al., 1996), the current study tested a multivariate prospective model of individual and family variables that were expected to be related to academic performance in Mexican American youth making the transition from elementary school to junior high school. Consistent with the integrative model, this study examined predictors of academic success *within* a diverse sample of Mexican American students and their families, included characteristics of the students' extended families as well as the immediate family and individual factors, and included factors that have been associated with academic performance in students generally as well as a cultural factor, bilingualism, and another background characteristic, immigrant status, that are more relevant to this population than the general student population. Testing a multivariate prospective model during this important transition should provide a better understanding of the relative importance of the selected independent variables than would results from an examination of relationships with individual predictors or cross-sectional analyses.

The results showed that human capital (having a parent with at least a high school education) and positive family role models at grade 5 were positively related to academic performance in 7<sup>th</sup> grade, while controlling for academic ranking in 5<sup>th</sup> grade, for this Mexican American sample. In addition, having people inside the immediate family and in the extended family who are role models for academic success, who understand what it takes to succeed in school, and who know the value of an education were valuable contributors to these Mexican American adolescents' school success. Having parents with at least a high school education and relatives who demonstrate the value of completing their education provide children with role models, information, and encouragement that support children's academic success (Coleman, 1988; García Coll et al., 2002). The results also support previous research on the importance of positive family role models for Latino adolescents (Saner & Ellickson, 1999).

Children's externalizing symptoms, as expected (e.g., Dodge & Pettit, 2003; Smith & Smith, 2010), were negatively related to children's grades prospectively even when all other

relationships in the model were controlled; in fact, this was the strongest predictor of these Mexican American adolescents' 7<sup>th</sup> grade academic performance once prior academic performance was controlled. Children with externalizing symptoms are more likely than most of their peers to be involved with delinquent peers, to develop negative attitudes toward school, to misbehave in school, and to have poor attendance records. Moreover, because externalizing symptoms are more common among boys than girls in this developmental period, this may at least partially explain the better academic performance of girls over boys. Overlooking this important risk factor for academic success leaves a critical void in most research on academic performance. Because Mexican American youth are more at risk than most of their peers for experiencing externalizing problems (Bird et al., 2001; CDC, 2006; Eaton et al, 2008), this risk factor alone may account for a significant portion of the school failure in this population. Failing to provide appropriate and effective treatment to children with externalizing problems is likely a harbinger of school failure or drop out for many Mexican American youth, particularly boys. Future studies should examine potential protective factors (e.g., ethnic identity, strong family relationships, home and school disciplinary practices) that may diminish externalizing behaviors, which could in turn promote better academic performance.

When other factors in the model were controlled, being bilingual (operationalized as regularly using both English and Spanish) was not significantly related to the academic performance of these Mexican American students. Although bilingualism may be related to improved cognitive ability and improved academic performance early in elementary school (e.g., Bialystok, 2007; Chitiri & Willows, 1997), this advantage may decline over time. By the time students get to junior high school, there may be many factors not included in this study, including the push from perceived discrimination in schools and the pull of deviant peers in the context of a larger and more impersonal school setting, that diminish the benefits of factors such as bilingualism by contributing to students disengagement from school. Further, because there was less human capital in the homes of bilingual students ( $r = -.14, p < .01$ ), these students may be less aware of the benefits of more education, less motivated to continue in school, and perhaps get less parental encouragement to continue. On the other hand, it is important to keep in mind that our measure assessed language *usage* rather than ability. It is possible that some of those with low scores on this variable were highly bilingual but did not have the opportunity to use both languages in a balanced way. Future research should assess bilingual abilities more directly to provide a better test of the relationship of bilingualism to academic performance in junior high school and later.

Surprisingly, the family level variables residential stability and family structure were not significantly related to children's academic success when all other relationships were accounted for. Although previous research has reported that residential stability was related to academic success among students in general (Mantzicopoulos & Knutson, 2000; South et al., 2007), we believe this is the first test of this relationship with Mexican American youth. Why residential stability would be less beneficial within this population than in other groups is not obvious. There are two considerations that might deserve further examination. First, the costs to academic success commonly associated with being more mobile in this study may have been mitigated by families' moving to better quality and/or more supportive schools. As others have shown (García Coll & Marks, 2009), the school context in which family and individual child resources are expressed is an important influence on children's academic success. Second, residential *instability* may not always have resulted in children's attending a new school; future research should continue to examine the possible effects of school stability on children's academic performance using a more direct measure that was available in this study.

Growing up with both biological parents did not seem to have provided these Mexican American adolescents with additional resources to support academic success. Perhaps this was because the extended family often compensates when the nuclear family has problems (Marin & Marin, 1991). Certainly, these results seem to show that Mexican American adolescents are as likely to be academically successful, or to fail academically, regardless of whether they live in an intact family or not.

Even while controlling for all other influences in the model, gender emerged as a significant predictor of academic success with girls getting better grades than boys consistent with the work of Updegraff and colleagues (2006). This difference was found even though a key variable that probably contributes to gender differences in behavior and school success, externalizing behavior, was included in the model. While these results clearly suggest that Mexican American boys are in greater need for prevention services than Mexican American girls, future research should attempt to distinguish the skills, attitudes, and behaviors that account for this gender difference in academic performance.

Consistent with some studies (e.g., Plunkett et al., 2008), and in contrast to others (e.g., Fuligni, 1997; 2001), immigrant status did not contribute to academic success in this study. The discrepancies among studies on the academic performance of immigrants versus nonimmigrants may be due to the use of uniformly low-income urban residents or predominantly cross sectional designs in some cases. Longitudinal studies that follow multiple groups of immigrants (e.g., those who arrive in the preschool years, those who arrive during elementary school, and those who arrive later) as well as diverse samples of native born children are needed to resolve the different conclusions arrived at in studies to date.

This study has several strengths that contribute to understanding influences on academic success of Mexican American youth. First, the prospective analysis allowed us to examine the relationships of predictors from 5<sup>th</sup> grade to academic outcomes in the 7<sup>th</sup> grade during the critically important transition period from elementary school to junior high. Second, it utilized a multivariate approach so that multiple family and individual variables could be examined simultaneously and embody a more holistic framework in understanding academic outcomes in Mexican American youth during this important developmental transition. Third, this study was conducted with an economically, linguistically, and residentially diverse sample of Mexican Americans thus increasing the likelihood that results will be more representative of the population than most and also enabling the researchers to examine intra-group variability (García-Coll et. al, 1996). Fourth, consistent with the integrative model of development of minority youth, this study included variables that were culturally or historically relevant to the Mexican American population contributing to our ability to examine variability in academic success within this population. Lastly, this study embodied a resiliency model, rather than a deficit model, which provides greater contributions to programs designed to promote academic success in this population.

It is important to keep the magnitude of the relationships between the significant predictors and 7<sup>th</sup> grade academic performance in perspective; the effect sizes of all predictors other than externalizing symptoms were small to very small and the model as a whole explained only about 11% of the variance in changes in academic performance at 7<sup>th</sup> grade after accounting for prior academic performance. This illustrates the need for much more research to identify factors that explain more of the variance in academic performance of this population. It also is important to notice that the family and individual characteristics used as predictors in this model do not influence academic performance in a vacuum; school contexts can facilitate or diminish the influences of these factors (García Coll & Marks, 2009). Future research on academic performance in Mexican American students should try

to contextualize the influences of family and individual factors more than was possible in the current study. Future studies also might consider examining other cultural (e.g., ethnic identity, familism) and noncultural (e.g., school attachment, peer group attitudes toward school success) variables as either predictors of academic success or as mediators or moderators in the relationships between relevant predictors, risks, and academic outcomes. Exploring these variables as mediators could help researchers identify key processes that lead to academic success in Mexican American adolescents. Finally, two of the measures used in this study were proxies for the constructs of interest. We relied on a measure of residential stability to represent the degree of school stability when a direct measure of school stability would have been better. Similarly, we created a measure of bilingualism from measures of language use rather than ability; a measure of students' ability in each language would have been preferred.

Despite limitations, this study expanded our understanding of familial and individual factors that may influence academic outcomes in Mexican American youth. Enhancing our understanding of factors that lead to academic success in Mexican American youth can potentially decrease the current achievement gap and dropout rates of this population thus increasing their chances of an economically successful future. The results suggest that providing programs that identify and ameliorate externalizing problems early in elementary school likely would be a good investment for improving the academic success of Mexican American (and most likely other) youth, particularly boys. Similarly, helping Mexican American children identify role models for academic success within or outside of their families might serve as a positive motivational factor for many. Future research is needed to identify additional factors that help explain the educational disparity of the Mexican American population. In addition, future research will be strengthened to the extent that study variables can be given contextual relevance by considering various qualities of the schools children are attending (e.g., ethnic diversity, discrimination from teachers and peers, quality of instruction, and level of openness to Mexican Americans) as well as important developmental context (pubertal development) and peer environment. The more that research can increase our understanding of the factors that contribute to the educational successes of the majority of Mexican American adolescents, the more likely that effective interventions can be developed to reduce the educational disparities experienced by a significant portion of this population.

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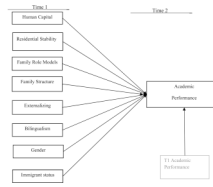
## References

- Arbuckle, J.L. Full information estimation in the presence of incomplete data. In: Marcoulides, G.A.; Schumacker, R.E., editors. *Advanced Structural Equation Modeling*. Hillsdale, NJ: Erlbaum; 1996. p. 243-278.
- Azmitia M, Cooper CR, Brown JR. Support and guidance from families, friends, and teachers in Latino adolescents' math pathways. *Journal of Early Adolescence*. 2009; 29:142-169.
- Bandura, A. *Self-efficacy: The exercise of control*. New York: Freeman; 1997.
- Barber BK, Olsen JA. Assessing the transitions to middle and high school. *Journal of Adolescent Research*. 2004; 19:3-30.

- Barcikowski RS. Statistical power with group mean as the unit of analysis. *Journal of Educational and Behavioral Statistics*. 1981; 6:267–285.
- Bialystok E. Acquisition of literacy in bilingual children: a framework for research. *Language Learning*. 2007; 52:45–77.
- Bird HR, Canino GJ, Davies M, Zhang H, Ramirez R, Lahey BB. Prevalence and correlates of antisocial behaviors among three ethnic groups. *Journal of Abnormal Child Psychology*. 2001; 29:465–478. [PubMed: 11761281]
- Bravo M, Ribera J, Rubio-Stipec M, Canino G, Shrout PE, Ramirez R, et al. Test-retest reliability of the Spanish version of the Diagnostic Interview Schedule for Children (DISC--IV). *Journal of Abnormal Child Psychology*. 2001; 29:433–444. [PubMed: 11695544]
- Bravo M, Woodbury-Farina M, Canino G, Rubio-Stipec M. The Spanish translation and cultural adaptation of the Diagnostic Interview Schedule for Children (DISC) in Puerto Rico. *Culture, Medicine and Psychiatry*. 1993; 17:329–344.
- Bridgeland, JM.; Dilulio, JJ.; Morison, KB. *The Silent Epidemic: Perspectives of High School Dropouts*. Civic Enterprises; 2006. Available at: <http://www.civicerprises.net/pdfs/thesilentepidemic3-06.pdf>
- Cavazos J Jr, Johnson MB, Fielding C, Cavazos AG, Castro V, Vela L. A qualitative study of resilient Latina/o college students. *Journal of Latinos and Education*. 2010; 9:172–188.
- Centers for Disease Control and Prevention. Youth risk behavior surveillance --- United States 2005. *MMWR*. 2006; 55(No. SS05):1–108.
- Chitiri H, Willows DM. Bilingual word recognition in English and Greek. *Applied Psycholinguistics*. 1997; 18:139–156.
- Coleman JS. Social capital in the creation of human capital. *American Journal of Sociology*. 1988; 94:95–120.
- Cuellar I, Arnold B, Maldonado R. Acculturation Rating Scale for Mexican Americans-II: A revision of the original ARSMA Scale. *Hispanic Journal of Behavioral Sciences*. 1995; 17:275–304.
- Dodge KA, Pettit GS. A Biopsychosocial Model of the Development of Chronic Conduct Problems in Adolescence. *Developmental Psychology*. 2003; 39:349–371. [PubMed: 12661890]
- Eaton DK, Kann L, Kinchen S, Shanklin S, Ross J, Hawkins J, Harris WA, Lowry R, McManus T, Chyen D, Lim C, Brener ND, Wechsler H. Youth Risk Behavior Surveillance --- United States, 2007. *MMWR Surveillance Summaries*. 2008 June 6; 57(SS04):1–131.
- Eccles, JS. Schools, academic motivation, and stage-environment fit. In: Lerner, RM.; Steinberg, L., editors. *Handbook of adolescent psychology*. 2nd ed. Hoboken, NJ: Wiley; 2004.
- Enders CK, Tofighi D. Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods*. 2007; 12(2) 121-121-138.
- Engel N. Relationship between mobility and student performance. *The Journal of Educational Research*. 2006; 99:166–178.
- Fuligni A. The academic achievement of adolescents from immigrant families: The role of family background, attitudes, and behavior. *Child Development*. 1997; 68:351–363. [PubMed: 9180006]
- Fuligni, AJ. Family obligation and academic motivation of adolescents from Asian, Latin American, and European backgrounds. In: Fuligni, AJ., editor. *Family obligation and assistance during adolescence: Contextual variations and developmental implications*. New York: Jossey-Bass; 2001. p. 61-75.
- Galindo C, Fuller B. The social competence of Latino kindergarteners and growth in mathematical understanding. *Developmental Psychology*. 2010; 46:579–592. [PubMed: 20438172]
- García Coll C, Akiba D, Palacios N, Bailey B, Silver R, DiMartino L, et al. Parental involvement in children's education. Lessons from three immigrant groups. *Parenting: Science and Practice*. 2002; 2:303–304.
- García Coll C, Crnic K, Lamberty G, Wasik BH, Jenkins R, Vásquez García H, McAdoo HP. An integrative model for the study of developmental competencies in minority children. *Child Development*. 1996; 67:1891–1914. [PubMed: 9022222]
- García Coll, C.; Marks, AK. *Immigrant stories: Ethnicity and academics in middle childhood*. New York: Oxford University Press; 2009.

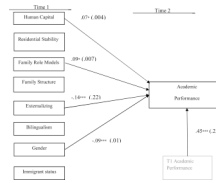
- Hinshaw, SP.; Zupan, BA. Assessment of antisocial behavior in children and adolescents. In: Stoff, DM.; Breiling, JM.; Maser, JD., editors. *Handbook of antisocial behavior*. New York: Wiley; 1997. p. 36-50.
- Jensen BT. The relationship between Spanish use in the classroom and the mathematics achievement of Spanish-speaking kindergarteners. *Journal of Latinos and Education*. 2007; 6:267–280.
- Johnson MK, Crosnoe R, Elder GH. Students' attachment and academic engagement: The role of race and ethnicity. *Sociology of Education*. 2001; 74:318–340.
- Kaplan DS, Damhousse KR. Mental health implications of not graduating from high school. *Journal of Experimental Education*. 1994; 62:105–124.
- Knight GP, Gonzales NA, Saenz DS, Bonds D, German M, Deardorff J, Roosa MW, Updegraff KA. The Mexican American Cultural Values Scale for adolescents and adults. *Journal of Early Adolescence*. 2010; 30:444–481. [PubMed: 20644653]
- Knight, GP.; Roosa, MW.; Umaña-Taylor, A. Studying ethnic minority and economically disadvantaged populations: Methodological challenges and best practices. Washington, DC: APA Books; 2009.
- Lopez EM, Gallimore R, Garnier H, Reese L. Preschool antecedents of mathematics achievement of Latinos: The influence of family resources, early literacy experiences, and preschool attendance. *Hispanic Journal of Behavioral Sciences*. 2007; 29:456–471.
- Magnuson K. Maternal education and children's academic achievement during middle childhood. *Developmental Psychology*. 2007; 43:1497–1512. [PubMed: 18020827]
- Mantzicopoulos P, Knutson DJ. Head start children: School mobility and achievement in the early grades. *Journal of Educational Research*. 2000; 93:305–311.
- Marín, G.; Marín, BV. *Research with Hispanic populations*. Thousand Oaks: Sage; 1991.
- Muthén, LK.; Muthén, BO. *Mplus user's guide*. Los Angeles: Muthén and Muthén; 1998–2009.
- Parcel TL, Dufur MJ, Zito C. Capital at home and at school: A review and synthesis. *Journal of Marriage and Family*. 2010; 72:828–846.
- Perez W, Espinoza R, Ramos K, Coronado HM, Cortes R. Academic resilience among undocumented Latino students. *Hispanic Journal of Behavioral Sciences*. 2009; 31:149–181.
- Plunkett SW, Henry CS, Houltberg BJ, Sands T, Abarca-Mortensen S. Academic support by significant others and educational resilience in Mexican-origin ninth grade students from intact families. *Journal of Early Adolescence*. 2008; 28:333–355.
- Portes A, Fernandez-Kelly P. No margin for error: Educational and occupational achievement among disadvantaged children of immigrants. *the annals of the American Academy of Political and Social Science*. 2008; 629:12–36.
- Portes, A.; Rumbaut, RG. *Legacies: The story of the immigrant second generation*. New York: Russell Sage Foundation; 2001.
- Ribera J, Canino G, Rubio-Stipec M, Bravo M. The Diagnostic Interview Schedule for Children (DISC-2.1) in Spanish: Reliability in a Hispanic population. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 1996; 37:195–204.
- Roosa MW, Liu F, Torres M, Gonzales N, Knight G, Saenz D. Sampling and recruitment in studies of cultural influences on adjustment: A case study with Mexican Americans. *Journal of Family Psychology*. 2008; 22:293–302. [PubMed: 18410216]
- Roosa, MW.; Wolchik, S.; Sandler, IN. Preventing the negative effects of common stressors: Current status and future directions. In: Wolchik, S.; Sandler, IN., editors. *Handbook of children's coping*. New York: Plenum; 1997. p. 515-533.
- Saner H, Ellickson P. Concurrent risk factors for adolescent violence. *Journal of Adolescent Health*. 1999; 19:94–103. [PubMed: 8863080]
- Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH diagnostic interview schedule for children version IV (NIMH DISC-IV): Description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2000; 39:28–38. [PubMed: 10638065]
- Schafer JL, Graham JW. Missing data: Our view of the state of the art. *Psychological Methods*. 2002; 7:147–177. [PubMed: 12090408]

- Smith JP, Smith GC. Long-term economic costs of psychological problems during childhood. *Social Science & Medicine*. 2010; 71:110–115. [PubMed: 20427110]
- South SJ, Haynie DL, Bose S. Student mobility and school dropout. *Social Science Research*. 2007; 36:68–94.
- Stanton-Salazar, RD. Manufacturing hope and despair: The school and kinship support networks of U.S.-Mexican youth. New York: Teachers College Press; 2001.
- Suarez-Orozco C, Gaytan FX, Bang HJ, Pakes J, O'Connor E, Rhodes J. Academic trajectories of newcomer immigrant youth. *Developmental Psychology*. 2010; 46:602–618. [PubMed: 20438174]
- Suldo S, Thalji A, Ferron J. Longitudinal academic outcomes predicted by early adolescents' subjective well-being, psychopathology, and mental health status yielded from a dual factor model. *The Journal of Positive Psychology*. 2011; 6 17-17-30.
- Updegraff KA, McHale SM, Whiteman SD, Thayer SM, Crouter AC. The nature and correlates of Mexican-American adolescents' time with parents and peers. *Child Development*. 2006; 77:1470–1486. [PubMed: 16999812]
- U.S. Census Bureau. Educational Attainment by Race and Hispanic Origin. 2010. Retrieved from: [http://www.census.gov/compendia/statab/cats/education/educational\\_attainment.html](http://www.census.gov/compendia/statab/cats/education/educational_attainment.html)
- U.S. Census Bureau. Current Population Survey. Washington DC: US Government Printing Office; 2005. Enrollment status of the population 3 years old and over, by sex, age, race, Hispanic origin, foreign-born, and foreign-born parentage: October 2003.
- U.S. Census Bureau. Geographical Mobility: 2010. 2010. Retrieved from: [http://www.census.gov/newsroom/releases/archives/mobility\\_of\\_the\\_population/cb11-91.html](http://www.census.gov/newsroom/releases/archives/mobility_of_the_population/cb11-91.html)
- U.S. Department of Education. The condition of education: 2007 (NCES 2007–094). Washington DC: US Government Printing Office; 2007.
- Waxman HC, Huang SL, Padron Y. Motivation and learning environment differences between resilient and nonresilient Latino middle school students. *Hispanic Journal of Behavioral Sciences*. 1997; 19:137–155.



**Figure 1.**  
Theoretical Model of Prospective Influences on Mexican American Students Academic Success





**Figure 2.** Results of testing the model with the full sample; standardized path coefficients shown with effect sizes (Cohen's  $f^2$ ) in parentheses.

Table 1

Zero-order correlations among study variables with means, and standard deviations.

	1	2	3	4	5	6	7	8	9	10
1. T1 Human Capital	1									
2. T1 Family Role Models	.31**	1								
3. T1 Residential Stability	.04	.04	1							
4. T1 Family Structure	-.05	-.04	.10*	1						
5. T1 Externalizing	.08*	.03	.04	-.10*	1					
6. T1 Bilingualism	-.14**	-.07	-.05	-.08*	-.14**	1				
7. Gender	-.03	-.01	.03	.04	.12**	-.05	1			
8. Immigrant Status	-.16	-.21**	-.20**	.14**	-.08*	.24**	.05	1		
9. T1 Academic Performance	.16**	.10*	.13**	.02	-.17**	-.01	-.10**	-.16**	1	
10. T2 Academic Performance	.14**	.13**	.08*	.03	-.25**	.08*	-.18**	-.04	.50**	1
Mean	.46	2.84	2.33	.79	5.15	.47	1.51	.30	3.21	3.44
SD	.50	.70	.78	.41	4.75	.50	.50	.46	1.31	1.15

\*  $p < .05$ ,

\*\*  $p < .01$