Latino Adolescents' Academic Qualities and Sources of Academic Socialization in 8th Grade and 1 Year Later

Melissa Y. Delgado
The University of Arizona

Lorey Wheeler
University of Nebraska-Lincoln

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Abstract

The educational attainment of Latino individuals in the United States matters for individual and national prosperity. As such, this white paper descriptively examined the longitudinal findings of the first two of three waves of data on Latino middle school students' general academic qualities, academic qualities specific to math and science, and sources of academic socialization. The sample included 163 middle school students (Time 1: M_{age} = 13.67, SD_{age} = 0.57; 49% girls, 80% U.S.-born; Time 2: M_{age} = 14.68, SD_{age} = 0.55; 49% girls) who were part of a larger study in Central Texas (N = 328). Our findings indicated changes in educational values, math grades, math identity, science identity, math commitment, maternal academic modeling, and teacher encouragement. Further, gender differences were found for educational aspirations, math/science grades, and friend academic modeling. Our findings also indicated changes in plans to enroll in advanced math/science coursework and enrollment in advanced math/science coursework. The study's findings are discussed in light of current educational attainment trends for female and male Latino adolescents.

Keywords: academic qualities, adolescence, Latinos, sources of academic socialization

In today's economy, educational attainment is a key factor for individuals' overall success (Ganzeboom, Treiman, & Ultree, 1991). Thus, it is important for scholars to focus on understanding academic qualities that might relate to youths' educational attainment (e.g., academic expectations) (Perez-Brena, Delgado, Rodriguez de Jesús, Updegraff, & Umaña-Taylor, 2017). Additionally, it is also important to understand the key sources of academic socialization (e.g., parents, peers, and teachers) that enable youth to achieve success in later life (e.g., Crosnoe, Mistry, & Elder, 2002). Youth face additional challenges as they transition from middle to high school (Benner, 2011); thus, examining key factors that relate to educational outcomes across this important developmental period is important. Overall, work that addresses socialization processes and academic factors as related to educational outcomes not only helps to promote individual adjustment, but also the immediate, global society and the global economy.

As such, it is imperative that we examine academic qualities and sources of academic socialization among the largest and fastest-growing groups of youth in U.S. public schools. From 2004 to 2014, Hispanics had the largest percentage increase of ethnic groups in U.S. public schools, increasing from 19% to 25%; in contrast, the percentage of White students decreased from 58% to 49.5% (National Center for Education Statistics, 2017a). In Texas public schools, Hispanic students accounted for the largest percentage (52.4%) of those enrolled during the 2016–17 school year, followed by White (28.1%), African American (12.6%), Asian (4.2%), and multiracial (2.2%) students (Texas Education Agency, 2017). Yet, Hispanics also had the lowest levels of educational attainment as compared to all other ethnic groups (National Center for Education Statistics, 2017b). Therefore, in contributing to our understanding on the academic qualities and sources of academic socialization of Latino adolescents, the purpose of this white

paper, is to describe (a) their academic qualities, namely school performance, academic self-efficacy, academic aspirations and expectations, and indicators of academic identity (i.e., academic identity, educational values, and school belonging), and (b) their parents, teachers, and peers as sources of academic socialization across a 2-year period, 8th grade and 1 year later.

According to the bioecological model of human development (Bronfenbrenner & Morris, 2006), *process* is at the core of human development as various forms of over-time interactions between the individual and its environment that depend on the developing *person's* qualities, on the person's *contexts,* and on *time* periods. Anchored in this theoretical model, we posit that to be able to get at the processes that produce future academic success, an initial step in this work is to be able to describe the academic qualities of the *person* and family and school *contexts* in the middle to high school *time* period. In this step, we focus on broad academic qualities (i.e., academic self-efficacy, academic aspirations and expectations, educational values, and school belonging) and more specific academic qualities (i.e., school performance in math/science, and math/science academic identity). Furthermore, in terms of family and school contexts, we focus on mothers' and fathers' modeling, school friend modeling, and teacher encouragement as sources of academic socialization.

Person **Academic Qualities**

The majority of Hispanic youth graduate from high school (78% in 2014–2015; U.S. Department of Education, 2017b) and make important advances in terms of their educational attainment, with a decline in high school dropout rates and an increase in college enrollment (Gramlich, 2017). The Hispanic graduation rate, however, is below the national average (83% in 2014–15; U.S. Department of Education, 2017b). And, despite a decline in their high school

dropout rate in the past two decades, Hispanic students continue to have lower high school completion rates (10% in 2016) compared to Black (7%), White (5%), and Asian (3%) students (Gramlich, 2017). Further, while Hispanic students are enrolling in college at an increased rate (32% in 1999 to 47% in 2016; Gramlich, 2017), Hispanic students (15%) are not as likely to obtain a 4-year college degree compared to Black (22%), White (41%), and Asian (63%) students (Krogstad, 2016). These rates not only hinder Latino youths' success, but that of U.S. society as a whole.

Therefore, more research is needed to promote the educational attainment of Latinos. Thus, continuing to learn about the factors considered to be academic qualities in this population is crucial, particularly in adolescence, when cognitive capacities mature (Steinberg, 2008). As part of this effort, we provide a descriptive study of Latino students' academic self-efficacy, or their beliefs in their academic abilities (Bandura, 1977, 1991); students' sense of belonging to school (Gándara & Gibson 2004; Goodenow, 1993; Matthews et al., 2014); and educational values (Eccles & Wigfield, 2002; Maurizi, Ceballo, Epstein-Ngo, & Cortina, 2013) in 8th grade and 1 year later. Further, we know that math and science have important implications for the academic trajectories of students (Syed, Azmitia, & Cooper, 2011); interest in math and science expands the educational and career options available to students (Wang & Degol, 2013). Given that Latinos are underrepresented in advanced math and science coursework (Riegle-Crumb, 2006), we also describe (a) Latino adolescents' plans to enroll in advanced math and/or science coursework, (b) their enrollment in advanced math and/or science coursework, (c) their performance in their math and science coursework, (d) their math and science academic identity or the degree to which students identify with math and science, and (e) their commitment to math

and science careers.

Family and School Contexts

Adolescents' experiences in various contexts, such as within the family and school, shape their academic futures (Bronfenbrenner & Morris, 2006). Thus, we also provide a descriptive study of parents, friends, and teachers as sources of academic socialization. We conceptualized parents and friends as socializing Latino adolescents through academic modeling (e.g., Whiteman, McHale, & Crouter, 2007). Furthermore, we also examined teacher encouragement, as they are considered a key source of support for students (Juvonen, 2007).

The Current Study

Data for this white paper are part of a 3-year longitudinal study, in which the overarching focus is to examine the familial, peer, and school predictors of academic identity and academic outcomes. The focus of this white paper is the following longitudinal descriptive findings for the first two waves of data: (a) Latino middle school students' general academic qualities (i.e., academic self-efficacy, academic aspirations and expectations, educational values, and school belonging) as well as academic qualities specific to math and science (i.e., plans to enroll in advanced math and/or science coursework, enrollment in advanced math and/or science coursework, school performance in math and science, math and science academic identity, and commitment to math and science), and (b) their sources of academic socialization in terms of their mothers, fathers, friends (i.e., modeling and de-identification), and teachers (i.e., encouragement). In describing Latino adolescents' academic qualities and sources of socialization across two time points, we further aimed to examine changes across time. as well as gender differences. given prior research with Latino samples indicating important differences in

factors relating to academic outcomes (e.g., Dumka, Gonzales, Bonds, & Millsap, 2008).

Method

Participants

The current data include a subset of the larger study: 163 families of middle school students who completed two waves of data collection as part of an ongoing longitudinal project on academic identity and academic achievement in which mothers and/or fathers also participated. Given the goals of the larger project, eligible students and their parents met the following criteria: (a) students were in the 8th grade, (b) biological mothers and/or biological or long-term adoptive fathers were living in the students' homes, and (c) biological mothers and/or biological fathers had origins in Latin America.

Middle school students in the 8th grade were recruited from five school districts in central Texas in 2015–16. To recruit 8th graders and their mothers and/or fathers, bilingual staff contacted families by telephone using the school district's open records data. Therefore, only families who gave schools consent to maintain their records open were contacted. Project staff assessed the families' eligibility and interest in participation. In the larger study, a total of 328 eligible families (i.e., teen and at least one parent) agreed to participate, in which at least one family member (i.e., parent and/or student) participated.

In the longitudinal subsample for the current study (n = 163), a little over half of mothers (52%) and fathers (43%) reported they were born in Mexico or other Latin American/Hispanic country (12% of mothers and 12% of fathers). A large proportion of mothers (43%) and fathers (50%) report being bilingual, with 67% of mothers and 55% of fathers speaking Spanish. Mothers and fathers completed an average of vocational or technical school ($M_{mothers}$ = 5.09, *SD*

= 2.79; $M_{fathers}$ = 5.73, *SD* = 2.83, in which a 4 = Graduated High School and a 5 = Vocational/Technical School). A majority of mothers (79%) reported that their families received food stamps. With respect to adolescents, the sample was 49% girls and 51% boys who averaged 13.67 (SD_{age} = .57) years of age at Time 1 (T1) and 14.68 (SD_{age} = .55) years of age at Time 2 (T2). Adolescents were born in the United States (80%), Mexico (13%), or other Latin American/Hispanic country (7%). A large proportion of adolescents (64%) were bilingual, and 77% reported speaking Spanish.

Measures

Measures[1] were forward-translated from English to Spanish and back-translated from Spanish to English for local Spanish dialects (e.g., primarily a Mexican dialect; Knight, Roosa, & Umaña-Taylor, 2009). The translations were reviewed by a third Mexican-origin translator. Any discrepancies were resolved by the bilingual research team.

Demographic variables. Adolescents reported their age, gender, birthplace, and ethnicity. Parents reported their education levels, birthplace, and ethnicity.

Academic self-efficacy. Adolescents reported on seven items assessing their beliefs that they can master the work they are given in school (e.g., "You are certain you can master the skills taught in school this year) (Arunkumar, Midgley, & Urdan, 1999). Response choices ranged from 1 (Not at all true) to 5 (Very true), and internal consistency was good (Cronbach's α = .83 - .84 for T1 – T2, respectively).

[1] Only measures used for the purposes of this white paper are reported. For a complete list of measures used in the study, please contact the first author.

Academic aspirations. Adolescents reported on their academic aspirations by answering the question, "How far would you like to go in school?" The response choices ranged from 1 (Middle School [6th–8th grade]) to 9 (Doctorate/Advanced Degree [MD, JD, DDS, Ph.D., etc.]).

Academic expectations. Adolescents reported on their academic aspirations by answering the question, "How far do you really think you'll go in school?" The response choices ranged from 1 (Middle School [6th–8th grade]) to 9 (Doctorate/Advanced Degree [MD, JD, DDS, Ph.D., etc.]).

Educational values. Adolescents reported the extent to which they believed education is integral to their future success. Adolescents responded on a five-item scale (e.g., "Going to college is necessary for a good future") with responses that ranged from 1 (Not at all true) to 5 (Almost always true), and internal consistency was good (Cronbach's α = .88 - .85 for T1 – T2, respectively).

School belonging. Adolescents reported the extent to which they felt they belonged at their schools using a four-item (e.g., "I feel close to others at my school") scale (Vaquera, 2009). Response choices ranged from 1 (Not true at all) to 4 (Very true) and internal consistency was acceptable (Cronbach's α = .76 - .73 for T1 – T2, respectively).

Enrollment in advanced coursework. Adolescents reported on their *plans* to enroll in "honors/advanced" math and science classes and their *enrollment* in "honors/advanced" math and science classes.

Performance in math and science. Adolescents reported on their school performance by answering the question, "Right now, what are your grades in the following subjects: Math? Science?"

Academic identity. A 10-item measure was used to assess adolescents' academic identity in math and science adapted from items developed to measure undergraduate students' academic major identity (Walker & Syed, 2013). Two items assessed adolescents' ethnic and academic identity. Sample items included the following: "In general, doing well in my science class is important to me," and "Being (self-identified ethnicity) is important to me as a science student." Response choices ranged from 1 (strongly disagree) to 5 (strongly agree), and internal consistency was good (Cronbach's α = .91 - .90 for math T1–T2, respectively and α = .89 - .90 for science T1 – T2, respectively).

Academic commitment. Adolescents reported their intentions to work in both science and math careers using a seven-item scale (e.g., "I know what I need to do to work with [science/math]") adapted from a measure developed for undergraduate and graduate students' intentions to work in the field of science (Chemers, Zurbriggen, Syed, Goza, & Bearmean, 2011). Response choices ranged from 1 (strongly disagree) to 5 (strongly agree), and internal consistency was good (Cronbach's α = .94 - .96 for Math T1 – T2, respectively and α = .94 - .95 for Science T1 – T2, respectively).

Parent and peer academic modeling. Adolescents reported the extent to which they model (e.g., "My mother gives me advice with respect to my education") their mothers, fathers, and friends, using an 8-item scale (Whiteman, McHale, & Crouter, 2007). Response choices ranged from 1 (Never happens) to 5 (Always happens), and internal consistency was good (Cronbach's α = .85-.91 for mothers T1–T2, respectively; α = .91-.92 for fathers T1–T2, respectively; and α = .86-.87 for friends T1–T2, respectively).

Teacher encouragement. Adolescents reported the extent to which "teachers at my school push me to be the best I can be," an item from the Positive Youth Development scale (Geldhof, Bowers, & Lerner, 2013). Response choices ranged from 1 (strongly agree) to 5 (strongly disagree).

Results

Descriptive data for the study variables are presented Table 1. To examine time, gender, and time X gender differences for all study variables, we used 2 by 2 ANOVAs. We found significant time and gender effects, but no time X gender effects (see Table 2). Starting with the Time effects, we found educational values, math grades, math identity, science identity, and math commitment were higher at T1 than T2 (see Figure 1 for an example of this effect for math grades). We also found differences for maternal modeling, with modeling being higher at T1 than T2. Teacher encouragement was higher at T2 than T1. Turning to the gender effects, we found that, for female adolescents, as compared to male adolescents, educational aspirations (Figure 2a), math and science grades (Figure 2b), and friend modeling were higher.

Table 1. *Descriptive Statistics for Academic Qualities and Sources of Academic Socialization*

Variables	n_{total}	M_{total}	SD_{total}	n_{girls}	M_{girls}	SD_{girls}	n_{boys}	M_{boys}	SD_{boys}
Academic Qualities Time 1									
1. Academic self-efficacy	163	4.04	0.67	83	4.13	0.67	80	3.95	0.66
2. Academic aspirations	160	7.17	1.62	83	7.40	1.41	77	6.92	1.79
3. Academic expectations	159	6.86	1.67	82	6.98	1.60	77	6.74	1.74
4. Educational values	163	4.46	0.68	83	4.45	0.74	80	4.47	0.62
5. School belonging	163	3.44	0.58	83	3.42	0.62	80	3.46	0.54
6. Grades-math	153	3.25	0.82	78	3.38	0.74	75	3.12	0.88
7. Grades-science	154	3.27	0.82	80	3.41	0.79	74	3.12	0.83
8. Academic identity-math	163	3.65	0.76	83	3.57	0.81	80	3.74	0.70
9. Academic identity-science	162	3.49	0.76	83	3.53	0.77	79	3.46	0.75
10. Academic commitment-math	163	3.28	1.02	83	3.18	1.09	80	3.39	0.94
11. Academic commitment-science	163	2.98	1.04	83	3.09	1.14	80	2.85	0.93
Academic Qualities Time 2									
1. Academic self-efficacy	163	3.96	0.64	83	3.98	0.68	80	3.93	0.60
2. Academic aspirations	161	7.10	1.41	82	7.22	1.45	79	6.97	1.36
3. Academic expectations	157	6.79	1.41	81	6.90	1.48	76	6.67	1.33
4. Educational values	163	4.34	0.62	83	4.33	0.63	80	4.34	0.61
5. School belonging	163	3.39	0.58	83	3.35	0.64	80	3.44	0.51
6. Grades-math	161	3.07	0.85	82	3.24	0.73	79	2.90	0.93
7. Grades-science	160	3.17	0.79	82	3.33	0.70	78	3.00	0.84
8. Academic identity-math	163	3.49	0.80	83	3.39	0.89	80	3.59	0.68
9. Academic identity-science	163	3.36	0.82	83	3.38	0.86	80	3.34	0.78
10. Academic commitment-math	162	3.11	1.10	82	2.97	1.16	80	3.24	1.01
11. Academic commitment-science	163	2.93	1.09	83	3.03	1.23	80	2.82	0.93
Sources of Academic Socialization Time 1									
1. Modeling-mothers	162	4.31	0.81	82	4.38	0.73	80	4.24	0.88
2. Modeling-fathers	156	4.07	1.07	79	4.09	1.04	77	4.05	1.12

3. Modeling-friends	162	3.60	0.94	82	3.88	0.76	80	3.32	1.02
4. Teacher encouragement	163	1.74	1.05	83	1.55	0.95	80	1.94	1.12
Sources of Academic Socialization									
Time 2									
1. Modeling-mothers	161	4.15	0.92	82	4.19	0.94	79	4.11	0.91
2. Modeling-fathers	153	4.03	1.01	80	4.01	1.01	73	4.06	1.02
3. Modeling-friends	161	3.46	1.00	83	3.68	0.98	78	3.23	0.98
4. Teacher encouragement	163	2.03	1.06	83	1.98	1.07	80	2.09	1.06

Table 2. *Significant ANOVA Results Examining Time, Gender, and Time X Gender Differences*

Variables	*F*-test			Time 1		Time 2	
Time Main Effects	*F*	*df*	*p*	*n*	*M*	*SE*	*M*	*SE*
Educational values	6.55	1, 161	.001	163	4.46	.05	4.34	.05
Grades-math	4.58	1, 150	.034	152	3.25	.07	3.09	.07
Academic identity-science	4.18	1, 160	.043	162	3.49	.06	3.37	.06
Academic identity-math	7.86	1, 161	.006	163	3.65	.06	3.49	.06
Academic commitment-math	6.22	1, 160	.014	162	3.30	.08	3.11	.09
Modeling-mothers	5.71	1, 158	.018	160	4.34	.06	4.14	.07
Teacher encouragement	7.87	1, 161	.006	163	1.75	.08	2.03	.08

	F-test			Male Adolescents			Female Adolescents		
Gender Main Effects	*F*	*df*	*p*	*M*	*SE*	*n*	*M*	*SE*	n
Educational aspirations	3.77	1, 157	.054	6.96	0.14	77	7.33	.13	82
Grades-math	7.53	1, 150	.007	3.02	0.08	74	3.33	.08	78
Grades-science	8.99	1, 149	.003	3.07	0.08	72	3.39	.07	79
Modeling-friends	18.79	1, 158	.000	3.27	0.09	78	3.78	.08	82

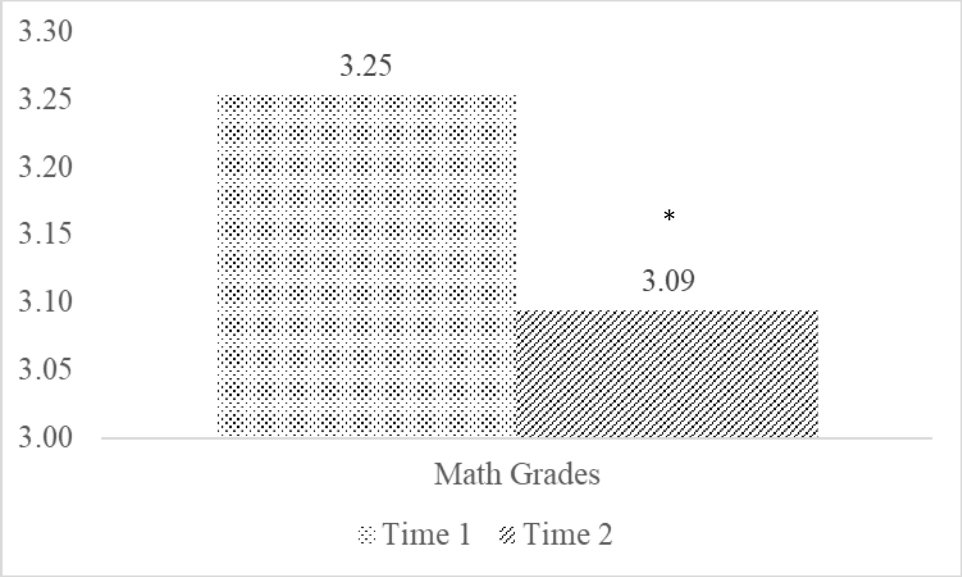
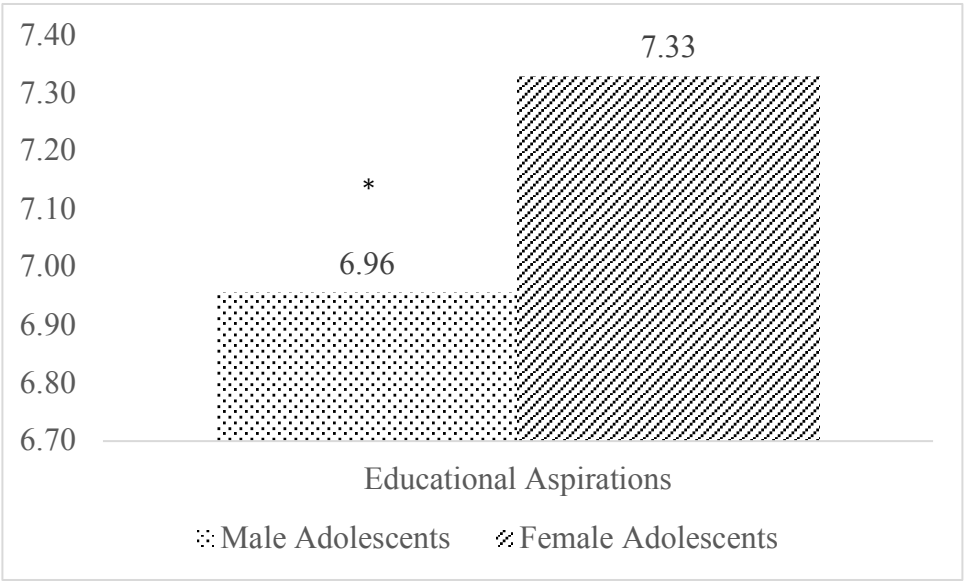


Figure 1. *Results of ANOVA examining Time Differences for Math Grades.*

Note. * $p < .05$.



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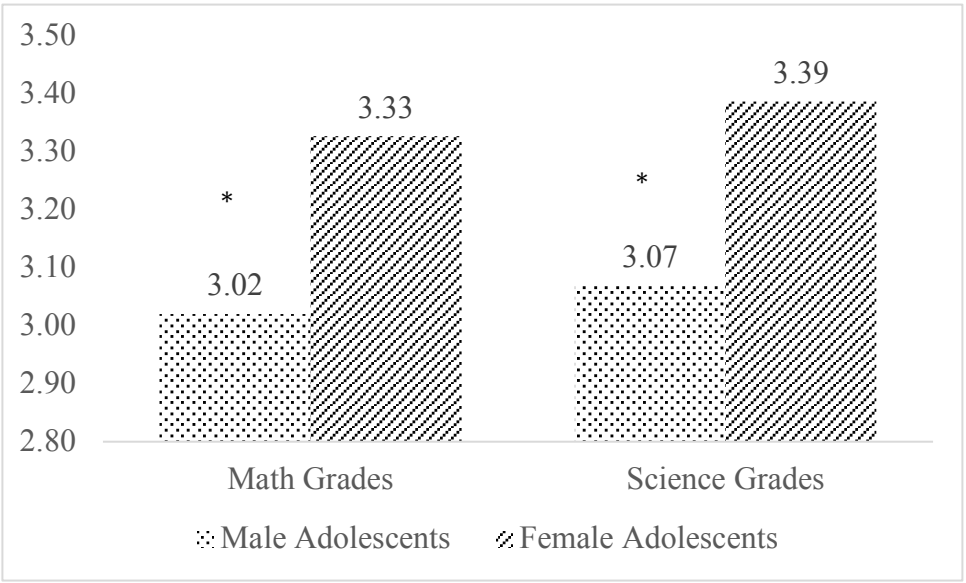


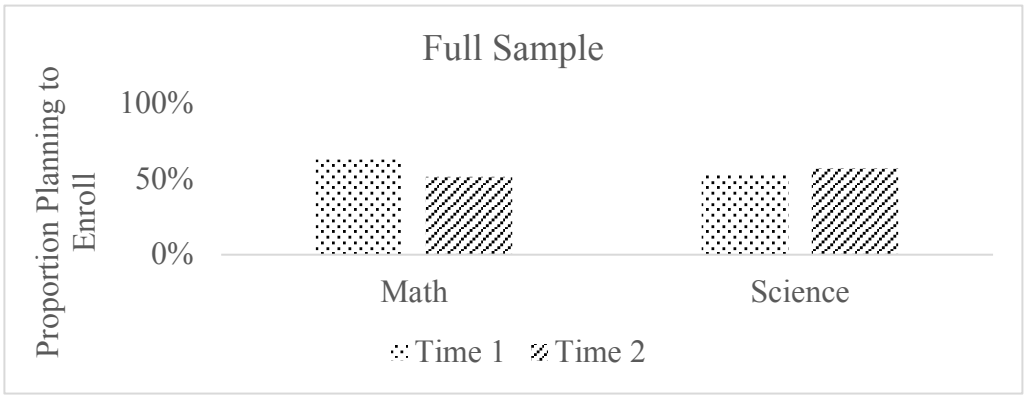
b.

Figure 2. *Results of ANOVA examining Gender Differences for Educational Aspirations (a) and Grades (b).*

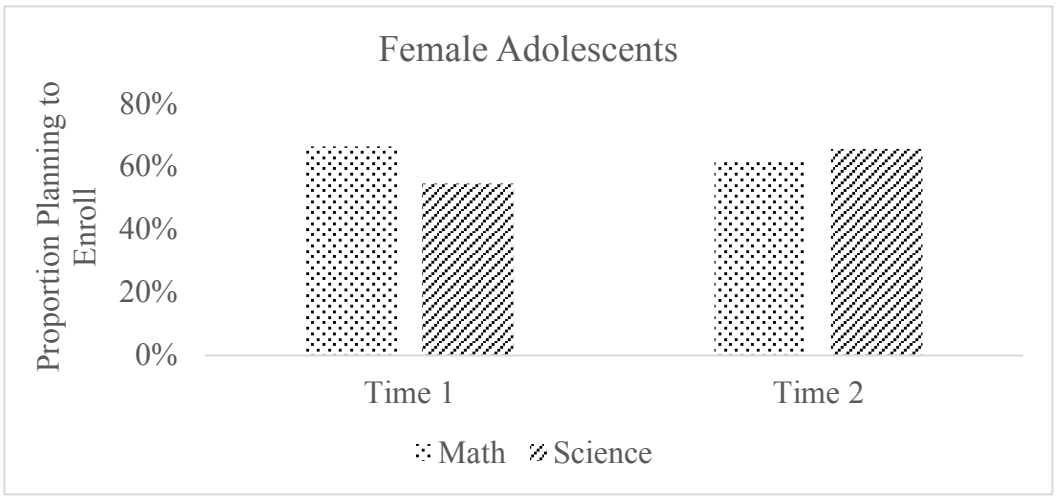
Note. * $p < .05$.

Further, we used chi-square analysis to examine the pattern of relationships among adolescents' (a) plans to enroll in advanced math and science courses from T1 to T2, and (b) plans to enroll in advanced courses at T1 and enrollment in advanced courses at T2. For both, we also examined associations by adolescents' gender. Additionally, analyses of variance (ANOVAs) were conducted to test for time and gender differences in all study variables.

In examining plans to enroll in advanced courses over time, we found relationships between T1 and T2 reports for math, χ^2 (1) = 17.04, $p < .001$, and science, χ^2 (1) = 18.70, $p < .001$ (Figure 3a). For math, we found that more adolescents planned to enroll in advanced courses at T1 than at T2. Conversely for science, more adolescents planned to enroll in advanced courses at T2 than at T1. We found similar patterns of associations for female [math: χ^2 (1) = 13.82, $p < .001$; science: χ^2 (1) = 8.88, $p = .003$] and male [math: χ^2 (1) = 4.07, $p = .044$; science: χ^2 (1) = 9.18, $p = .002$] adolescents (Figures 3b, 3c). The only exception was for male adolescents, for whom the proportion of science plans stayed the same across time.



a.



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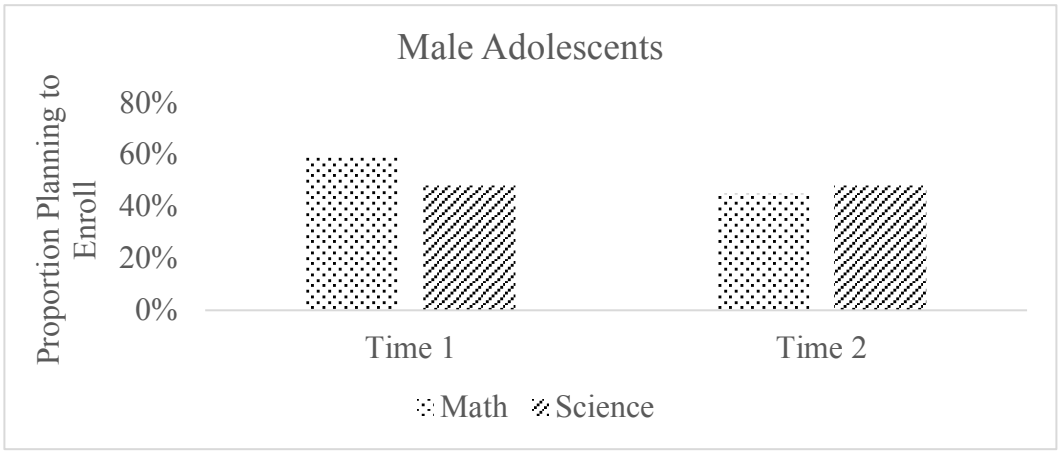
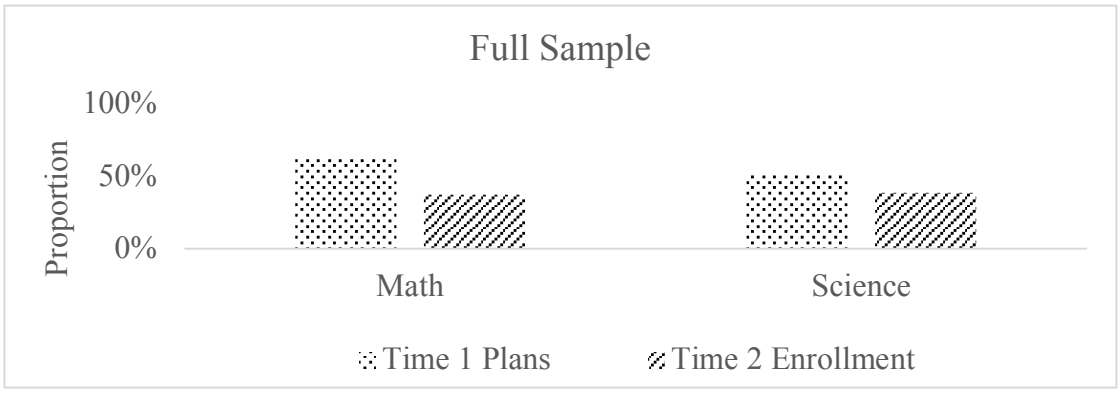


c.

Figure 3. *Results of Chi-Square Analysis examining the Relation between the Proportion of Adolescents' Planning to Enroll in Advanced Courses at Time 1 Compared to Time 2.*

Note. a. Full sample. b. female Adolescents. c. Male adolescents.

We also examined the association between plans to enroll in advances courses (T1) and enrollment in advanced courses (T2). There was evidence of associations between plans and enrollment for both math, χ^2 (2) = 28.53, $p < .001$, and science, χ^2 (1) = 10.39, $p = .006$ (Figure 4a). Over half of adolescents who planned to enroll in advanced math (63%) and science (52%) courses, enrolled in advanced math and science courses (37% and 38% of total enrollment, respectively). We found similar patterns of associations for female [math: χ^2 (2) = 26.27, $p < .001$; science: χ^2 (1) = 4.79, $p = .029$] but not male [math: χ^2 (2) = 5.39, $p = .068$; science: χ^2 (2) = 5.39, $p = .067$] adolescents (Figures 4b, 4c). Over two-thirds of female adolescents who planned to enroll in advanced math (66%) and science (55%) courses, enrolled in advanced math and science courses (46% and 45% of total enrollment, respectively).



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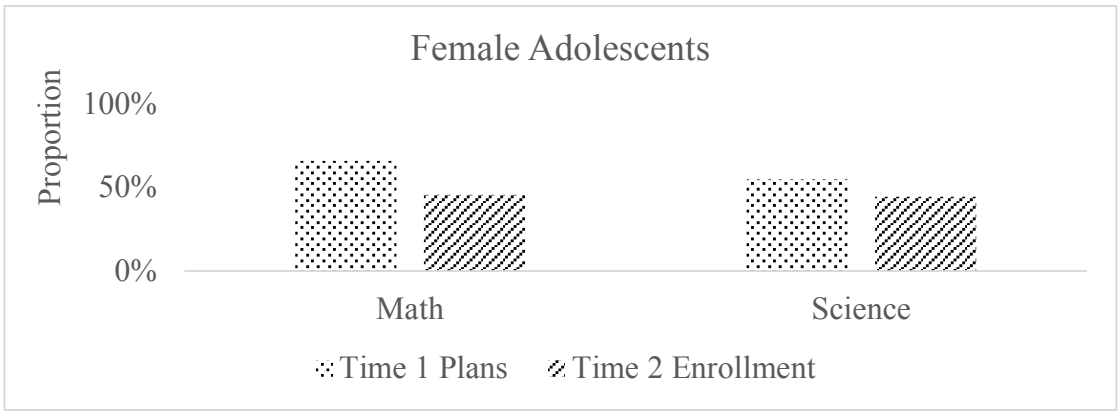

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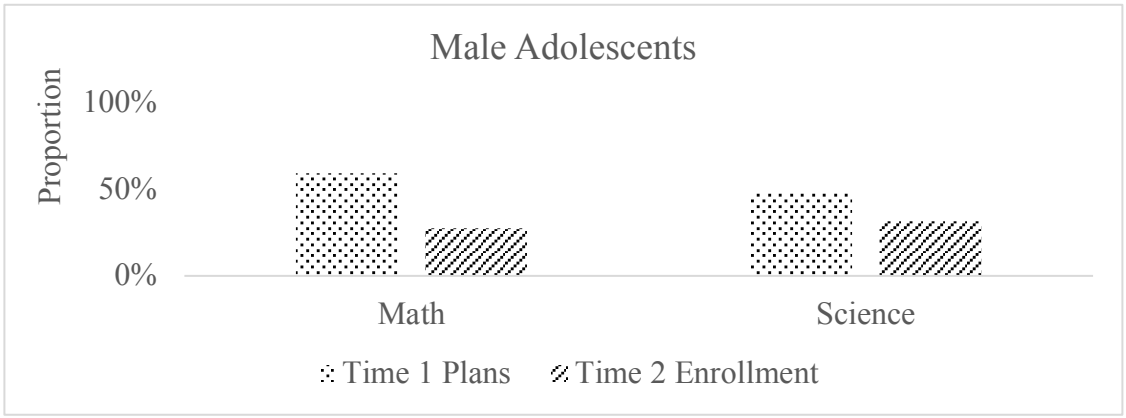

c.

Figure 4. *Results of Chi-Square Analysis examining the Relation between the Proportion of Adolescents' Planning to Enroll in Advanced Courses at Time 1 and Proportion of Adolescents that Enrolled in Advanced Courses at Time 2.*

Note. a. Full sample. b. Female adolescents. c. Male adolescents.

Discussion

Using data from a 3-year, longitudinal study, the purpose of this white paper was to detail Latino middle school students' academic qualities and sources of academic socialization in 8th grade and 1 year later. Guided by the bioecological model of human development (Bronfenbrenner & Morris, 2006), we contribute to the work on understanding the processes that produce Latino youths' future academic success in three preliminary ways. First, we take part in steps to describe the academic qualities of the *person*, including more general academic qualities, namely academic self-efficacy, academic aspirations and expectations, educational values, and school belonging, and academic qualities specific to math and science; that is, plans to enroll in advanced math and/or science coursework, enrollment in advanced math and/or science coursework, school performance in math and science, math and science academic identity, and commitment to math and science. Second, we describe family and school *contexts,* specifically, mother and father academic modeling, friend academic modeling, and teacher encouragement. Third, we focus on the middle to high school *time* period, examining how academic qualities and sources of academic socialization change from 8th grade to 1 year later for Latino females and males.

Consistent with the evidence that the transition out of middle school is disruptive of student adjustment (Benner, 2011), we found that educational values, math grades, math academic identity, science academic identity, and math commitment decreased from the 8th grade to 1 year later. For females, however, we found that academic aspirations and their math

and science grades increased across the 2 years. The findings for females are consistent with Latino females' (57% of Latino undergraduates in 2014) higher rates of college enrollment, compared to Latino males' (43% of Latino undergraduates in 2014), and with their higher rates of enrollment in graduate programs (62% of Latinos enrolled in graduate programs), compared to Latino males (43% of Latinos enrolled in graduate programs) (National Center for Education Statistics, 2014a). These patterns reflect the need to (a) better understand the challenges youth experience in their transition out of middle school, (b) identify how to change the trajectory for Latino males, and (c) identify how to continue to promote progress among Latina females. It is important to note that despite the fact that Latinas outperform their male counterparts, Latinas earn less than Latinos (National Women's Law Center, 2015); in fact, they are more likely to be living in poverty. Furthermore, of all women, Latinas have the lowest high school graduation rates and the lowest college completion rates compared to other major ethnic groups (National Center for Education Statistics, 2014b).

Additionally, given that a science, technology, engineering and mathematics or STEM-capable workforce is necessary for the prosperity and competitiveness of individuals and the nation as a whole (National Science Board, 2015), it is also important to examine patterns in Latino adolescents' math and science interests and performance. This is particularly true for Latinos, who are the fastest-growing, college-age population and who are underrepresented in science and engineering degrees and occupations (6.8% and 5.2%, respectively in 2010; National Science Board, 2015). As such, we further examined whether Latino adolescents planned to enroll in advanced math and science courses, which are the courses that help prepare for future STEM careers (Riegle-Crumb, 2006). We also examined whether or not they enrolled in an

advanced math and/or science course. Our findings indicated that from 8th grade to 1 year after 8th grade, fewer students planned to enroll in advanced math coursework. In this time period, however, more students planned to enroll in advanced science coursework. These findings were similar for females, except that males demonstrated stability in their interest to enroll in advanced science coursework. Over half of the adolescents who planned to enroll in advanced math and science coursework in 8th grade actually enrolled in math and science coursework the following year. This finding was similar for females. Future work should continue to explore these patterns and include questions on the processes that enable Latino youth to enroll and persist in advanced math and science coursework.

In terms of sources of academic socialization, we found that maternal academic modeling decreased from 8th grade to 1 year later, teacher encouragement increased, and for females, friend modeling increased. These findings may be indicative of the changing interpersonal relationships that occur in adolescence. For example, adolescents spend the largest percentage of their time at school (e.g., Carlson, et al., 2016) and, thus, may turn to teachers or friends. It is important for future work to address the evolving relationships of Latino adolescents and their impact on the academic success in the middle to high school years.

Of course, it is important to note the findings for this white paper reflect preliminary longitudinal findings. An important next step will be to include the third wave of data to determine linear effects and/or potential quadratic effects across time. Additionally, it will be important to examine the interrelations between academic Latino youths' academic qualities and family, friend, and teacher socialization agents across time. The latter will allow us to get closer to understanding the processes that produce academic success among Latino youth.

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