



# **Latino Adolescents' Academic Identity and Achievement: Descriptive Findings**

Melissa Y. Delgado  
Texas State University

Lorey Wheeler  
University of Nebraska, Lincoln

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Author Note:

Correspondence concerning this white paper should be addressed to Melissa Delgado, Norton School of Family and Consumer Sciences, The University of Arizona, 650 N. Park Avenue, Tucson, AZ 85721-0078. Email: [mydelgado@email.arizona.edu](mailto:mydelgado@email.arizona.edu)

### Abstract

A Positive Youth Development perspective, the theory of identity development, and an ecological framework provided the theoretical foundations to examine descriptively individual (i.e., academic characteristics) and contextual (i.e., parent, peer, and teacher academic socialization) factors related to academic identity and achievement in 285 Latino middle school students ( $M_{age} = 13.69$ ,  $SD_{age} = 0.56$ ; 54% girls, 86% U.S.-born) in central Texas. Our findings indicated Latino adolescents report average levels of math academic identity and science academic identity. Further, significant gender differences emerged, indicating Latina middle school girls have an overall better math and science outlook; girls reported higher levels of math academic identity than boys, better math and science grades compared to boys, and higher academic aspirations than middle school boys.

*Keywords:* Academic achievement, academic identity, adolescence, Latinos, sources of socialization

### **Latino Adolescents' Academic Identity and Achievement: Descriptive Findings**

Latino students, a large and growing population in the U.S. (Fry & Gonzales, 2008), have a low representation in courses (e.g., advanced math courses) that prepare for postsecondary academic success (Riegle-Crumb, 2006). At a time when youth begin to make choices about what classes they take, or are tracked into separate types of courses based on perceived ability (e.g., in middle school), it is important to consider the role identity development plays (Erikson, 1968). Academic identity, or the extent to which students understand themselves in terms of math and science, might play an important role in the type of coursework youth pursue. Conversely, the types of courses in which youth are placed might shape their academic identity with respect to math and science and, in turn, their academic achievement.

Mexican-origin individuals, who largely comprise the U.S. Latino population (65%), attain high school diplomas at low numbers (26%) and bachelor's degrees at bleak levels (9%; of those 25 years and older in 2010; Motel & Patten, 2012). Therefore, it is important to identify and describe the academic characteristics of these youth and the potential sources of academic socialization that might be related to academic identity and achievement. As such, the purpose of this white paper is to (a) describe Latino middle school students' academic characteristics (e.g., academic identity, school belonging), (b) describe their sources of academic socialization with regard to mothers, fathers, friends (i.e., modeling and de-identification), and teachers (i.e., encouragement), (c) examine the bivariate correlations among these factors, and (d) explore whether gender differences exist in academic characteristics and sources of academic socialization.

### **Guiding Theoretical Perspectives**

Taking a strength-based approach, the Positive Youth Development (PYD) perspective

(e.g., Lerner et al., 2005; Lerner et al., 2013; Lerner & Overton, 2008) provided the support for a study on the interrelated individual (e.g., academic characteristics) and contextual (e.g., family, school) factors that promote thriving at school. At the individual level, Erikson's (1968) "identity crises," as formative tasks during the adolescent period, provided the foundation to explore academic (i.e., math, science) identity at the center of navigating the student self in the school setting. At the contextual level, an ecological perspective (Bronfenbrenner & Morris, 2006) guided the inclusion of further individual academic characteristics (e.g., academic self-efficacy) and students' most proximal settings, the home (i.e., parents) and school (i.e., teachers and friends).

### **Individual Academic Characteristics**

The number of science, technology, engineering, and mathematics (STEM) education degrees awarded to Latinos has remained remarkably low; for instance, physical science B.A. or Ph.D. awards to Latinos increased only slightly from 4% in 1985 to 6% in 2005 (National Science Board, 2008). Math and science interests or, more specifically, those that lead into STEM careers, expand the educational and career options available to students (Wang & Degol, 2013). Therefore, in work focused on examining math and science factors, namely, math and science academic identity, academic commitment to math and science, and performance in math and science courses, and factors related to math and science, including academic self-efficacy, academic aspirations and expectations, educational values, and school belonging.

**Math and science academic identity.** Academic identity is specified in this study as the degree to which students identify with math and science. This identity process begins in adolescence and, as such, Latino adolescents' first perceptions of math and science are significant for the progression of these identities into emerging adulthood (e.g., college), when

youth are likely to be committing to their careers (e.g., Lovey & Syed, 2013). Yet, Latino students might be at a disadvantage in their math and science identity development when they are underrepresented in advanced math and science coursework (Riegle-Crumb, 2006), either because of self-selection or tracking into math and science coursework. Previous work with undergraduate students indicates research experience as a predictor to identifying as a scientist (Robnett, Chemers, & Zurbriggen, 2015). Extending this work to middle school students, advanced math and science courses might provide students with opportunities that allow them to enhance their exploration of how they see themselves as fitting into these settings. Thus, as a first step, a goal of this study is to describe the average levels of academic identity among Latino middle school students, with future work examining the bidirectional relations between math and science coursework and academic identity.

**Academic commitment to math and science.** Identity scholars would describe adolescents with high levels of identity as highly committed *and* stable in their identity (Marcia, 1980). However, in work with undergraduate, graduate, and postgraduate students, *academic* identity is found to continue to develop throughout emerging adulthood (Chemers, Zurbriggen, Syed, Goza, & Bearman, 2011; Robnett et al., 2005). Furthermore, in work with Native American and Latino undergraduate, graduate, and postgraduate students, self-efficacy and academic identity predicted commitment to a career in science, in which academic identity was a stronger predictor (Chemers, Zurbriggen, Syed, Goza, & Bearman, 2011). Therefore, academic identity and commitment might have different meanings, especially at the earlier stages of academic identity development. Thus, we examined academic commitment to math and science as a separate construct related to academic identity.

**Academic self-efficacy.** Similarly, it is important to differentiate between adolescents'

perceptions of who they are with respect to math and/or science (i.e., academic identity) and their beliefs in their math and/or science abilities (i.e., self-efficacy; Bandura, 1977, 1991). In other words, students might have strong beliefs in their abilities to do well in multiple academic domains that include math and science, but not include math or science as part of their broad sense of selves, preferring to identify as readers or writers. Furthermore, with undergraduate students, researchers found that science self-efficacy was a predictor of scientist identity in a mediation model, in which self-efficacy explained the relation between research experience and identity as a scientist (Robnett et al., 2015). Thus, in the current study, we examined middle school students' beliefs in their math and science abilities (i.e., self-efficacy) in addition to academic identity.

**School belonging.** Academic identity has also been conceptualized as a students' sense of belonging to their schools (Goodenow, 1993; Matthews et al., 2014), but research has found that they are indeed separate constructs (e.g., Matthews et al., 2014). Examining Latino middle school students' sense of school belonging is important given their value on interconnectedness that extends to relationships outside the family, for example, relationships with teachers and friends (e.g., Way et al., 2005). Latino students' interconnectedness with schools further allows them to adapt to the schools' academic norms and attitudes (Gándara & Gibson 2004; Osterman 2000; Matthews, 2014). Thus, we examined Latino adolescents' school belonging as a related academic characteristic.

**Educational values.** Another construct examined as a component of academic identity is educational values (Matthews et al., 2014). Educational values are theorized as important for academic performance and motivation (i.e., Expectancy-value models of motivation; Eccles & Wigfield, 2002). Moreover, empirical work finds support for the links between educational

values and academic outcomes, including mastery orientation among ethnic minority male adolescents (Matthews et al., 2014) and school belonging among Latino adolescents (Maurizi, Ceballo, Epstein-Ngo, & Cortina, 2013). In this study, educational values are examined as another important academic characteristic of Latino adolescents.

**Academic aspirations and expectations.** Latino adolescents' academic identity might also matter for their academic aspirations and expectations. Academic identity might shape how far Latino students would like to go in school (i.e., aspirations) which, in turn, might be linked to how far they expect to go in school (e.g., possible selves; Markus & Nurius, 1986). Academic aspirations and expectations might be the process that explain the link between academic identity and academic achievement, given they are thought to connect motives to actions (Markus & Nurius). Therefore, as separate constructs, this study also examined Latino adolescents' academic aspirations and expectations.

**Performance in math and science courses.** Latino youth have higher school dropout rates compared to those of their White and Black counterparts, a pattern that has continued over a 40-year period (Child Trends, 2014). School performance in math and science has important implications for the academic trajectories of students (Syed, Azmitia, & Cooper, 2011). Yet, White students' representation in advanced math categories are significantly higher than for African American and Latino students (Riegle-Crumb, 2006). Considering the disparities, we endeavored to examine the within-group variability in math and science grades of Latino middle school students to better understand factors contributing to variability in grades for these youths.

### **Sources of Academic Socialization**

Adolescents' experiences in various contexts, such as those in the home and school, shape their perceptions (Bronfenbrenner & Morris, 2006), including those of their current and

future identities (Markus & Nurius, 1986; Oyserman, Bybee, & Terry, 2006; Oyserman & Destin, 2010). For example, family and teachers have been identified by Latinas as important for science identity development (Jackson & Suizzo, 2015). Having various sources of socialization might allow youth to explore various academic domains as they develop their academic identities (Erikson, 1968). Thus, we examined parents, friends, and teachers as academic socialization agents. We examined parents and friends as socializing Latino adolescents through modeling in the context of positive relationships, or de-identification in the context of negative relationships, wanting to differentiate themselves from parents and friends (e.g., Whiteman, McHale, & Crouter, 2007). Furthermore, we also examined teacher encouragement, considered to be key source of support for students (Juvonen, 2007), and which has been found to matter for academic identity in qualitative studies of Latina college students (Jackson & Suizzo, 2015) and Black middle school students (Legette, 2017).

### **Gender**

Socialization efforts might be dependent on adolescents' gender. In the STEM pipeline, for example, Latinas are also greatly underrepresented (National Science Board, 2008; National Science Foundation; 2013), which might be due to Latino fathers and mothers, known to socialize their adolescent girls and boys differently (Parke & Buriel, 2006). For example, parents might focus more on academics for boys as compared to girls. Thus, we explored gender differences in both individual academic characteristics and academic socialization sources.

### **The Current Study**

Data for this white paper are part of a larger ongoing longitudinal study, in which the overarching focus is to examine the familial, peer, and school predictors of academic identity and achievement. The focus of this white paper is to detail the *preliminary* findings describing (a)

Latino middle school students' academic characteristics (e.g., academic identity, school belonging), (b) their sources of academic socialization regarding mothers, fathers, friends (i.e., modeling and de-identification), and teachers (i.e., encouragement), (c) the correlational patterns among these factors, and (d) gender differences in academic characteristics and sources of academic socialization.

## **Method**

### **Participants**

The current data include 285 middle school students who are part of an ongoing longitudinal project centered on academic identity and academic achievement in which mothers and/or fathers also participated. Given the goals of the overall project, eligible students and their parents met the following criteria: (a) students were in the 8<sup>th</sup> 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 8<sup>th</sup> grade were recruited from two school districts in central Texas in 2015/2016. To recruit 8<sup>th</sup> 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. A total of 285 eligible families (i.e., teen and at least one parent) agreed to participate, in which a student and at least one parent participated.

A little over half of mothers (52%) and fathers (53%) reported they were born in Mexico (43% of mothers and 44% of fathers) or other Latin American/Hispanic country (9% of mothers and 9% of fathers). Mothers and fathers completed an average of a high school level of education

( $M_{mothers} = 4.42$ ,  $SD = 2.79$ ;  $M_{fathers} = 4.94$ ,  $SD = 2.85$ , in which a 4 = Graduated High School and a 5 = Vocational/Technical School). Most mothers (82%) reported their families received food stamps. With respect to adolescents, the sample was 54% girls and 46% boys who averaged 13.69 ( $SD_{age} = 0.56$ ) years of age. Adolescents were born in the U.S. (86%), Mexico (9%), or other Latin American/Hispanic country (5%).

### **Procedure**

Families participated in telephone interviews lasting from 40 minutes to an hour. Parents gave informed consent for themselves and their adolescents, and adolescents gave informed assent. In their preferred language (English or Spanish), parents and adolescents reported on their demographic information; adolescents reported on parent and friend modeling and academic adjustment. Telephone interviews were conducted separately with each participating family member. Bilingual interviewers contacted families who had a family member who preferred to complete the interview in Spanish. Monolingual and bilingual interviewers read questions aloud to maximize uniformity and prevent potential error due to variability in participants' reading levels. Families received \$25 for completion of the telephone interviews with the target 8<sup>th</sup> grader and at least one parent. The university's Institutional Review Board approved all procedures.

### **Measures**

Measures<sup>1</sup> were forward-translated from English to Spanish and back-translated from Spanish to English for local Spanish dialect (e.g., primarily 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.

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<sup>1</sup> 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.

**Parent modeling/de-identification.** Adolescents reported the extent to which they model (e.g., “My mother gives me advice with respect to my education”) or differentiate (e.g., “I try to have educational experiences that are different from my mother’s”) from their mothers, fathers, and friends, using an eight-item scale (Whiteman, McHale, & Crouter, 2007). Response choices ranged from 1 (*never happens*) to 5 (*always happens*).

**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*).

**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*).

**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 include, “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*).

**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*).

**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 [6-8<sup>th</sup> 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 [6-8<sup>th</sup> 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*).

**Performance in math and science.** Adolescents reported on their school performance answering, “Right now, what are your grades in the following subjects? Math? Science?”

**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*).

**Demographic variables.** Adolescents reported their age, gender, birthplace, ethnicity, and plans to enroll in honors/advanced math and science classes. Parents reported their education levels, birthplace, and ethnicity.

## Results

Descriptive data were examined along with the correlational patterns to assess the relations among the study variables (see Tables 1 and 2). Further, analyses of variance (ANOVAs) were conducted to test for gender differences in all study variables. Significant gender differences were found for math academic identity,  $F(1, 279) = 4.33, p < .05$ , peer modeling  $F(1, 279) = 18.46, p < .001$ , math grades,  $F(1, 263) = 10.29, p < .01$ , science grades,  $F(1, 262) = 11.56, p < .01$ , aspirations,  $F(1, 275) = 5.32, p < .05$ , and teacher encouragement,  $F(1, 280) = 6.02, p < .05$ , with females being higher than male adolescents on all domains. In particular, female adolescents reported higher levels of math academic identity (females:  $M = 3.48, SD = .80$ ; males:  $M = 3.42, SD = .75$ ), peer modeling (females:  $M = 3.81, SD = .84$ ; males:  $M = 3.34, SD = .96$ ), math grades (females:  $M = 3.34, SD = .74$ ; males:  $M = 3.01, SD = .95$ ), science grades (females:  $M = 3.37, SD = .79$ ; males:  $M = 3.02, SD = .84$ ), aspirations (females:  $M = 7.32, SD = 1.39$ ; males:  $M = 6.88, SD = 1.74$ ) and teacher encouragement (females:  $M = 1.64, SD = .96$ ; males:  $M = 1.94, SD = 1.11$ ) than males.

Table 1. *Descriptive Statistics for Socialization and Academic Variables.*

Variables	$n_{total}$	$M_{total}$	$SD_{total}$	$n_{girls}$	$M_{girls}$	$SD_{girls}$	$n_{boys}$	$M_{boys}$	$SD_{boys}$
<i>Academic Characteristics</i>									
1. Academic Commitment-Math	287	2.93	1.05	151	3.03	1.14	129	2.78	0.90
2. Academic Commitment-Science	287	3.23	1.01	151	3.11	1.06	129	3.33	0.93
3. Academic Identity-Math	286	3.46	0.77	151	3.48	0.80	128	3.42	0.75
4. Academic Identity-Science	287	3.62	0.77	151	3.55	0.82	129	3.70	0.70
5. Academic Self-Efficacy	286	4.06	0.61	150	4.12	0.61	129	3.99	0.61
6. Academic Aspirations	283	7.12	1.57	149	7.32	1.39	127	6.88	1.74
7. Academic Expectations	279	6.78	1.64	146	6.85	1.59	126	6.70	1.72
8. Educational Values	286	4.50	0.62	150	4.50	0.63	129	4.48	0.61
9. Grades-Math	271	3.17	0.87	141	3.34	0.74	123	3.01	0.95
10. Grades-Science	269	3.22	0.83	142	3.37	0.79	121	3.02	0.84
11. School belonging	288	3.45	0.57	151	3.42	0.60	130	3.47	0.54
<i>Sources of Academic Socialization</i>									
1. Modeling-Mothers	288	4.34	0.81	151	4.37	0.82	130	4.31	0.81
2. Modeling-Fathers	280	4.06	1.12	149	4.05	1.15	125	4.05	1.12
3. Modeling-Friends	287	3.60	0.92	150	3.81	0.84	130	3.34	0.96
4. Deidentification-Mothers	287	3.57	0.85	150	3.61	0.82	130	3.53	0.88
5. De-identification-Fathers	279	3.49	1.01	148	3.51	1.04	125	3.48	1.00
6. De-identification-Friends	288	3.38	0.90	151	3.28	0.96	130	3.50	0.83
7. Teacher encouragement	288	1.77	1.03	151	1.64	0.96	130	1.94	1.11

### Discussion

Using preliminary data from an ongoing longitudinal study, the purpose of this white paper was to detail Latino middle school students' academic characteristics, academic sources of socialization, the correlational patterns among individual and contextual factors, and any gender differences in academic characteristics and sources of academic socialization. Positive Youth Development (e.g., Lerner et al., 2005; Lerner et al., 2013; Lerner & Overton, 2008), identity development (Erikson, 1968), and ecological (Bronfenbrenner & Morris, 2006) frameworks guided this work to define potential factors related to math and science academic identities. The findings of this study indicated Latino adolescents report average levels of math academic identity and science academic identity. Commitment to math was the academic characteristic with the lowest mean levels, whereas educational values was the academic characteristic with the highest mean levels, on a five-point scale.

Further, significant gender differences emerged, indicating Latina girls have an overall better math and science outlook; middle school girls reported higher levels of math academic identity, better math and science grades, and higher academic aspirations than middle school boys. In line with how Latino parents socialize their adolescent girls and boys (Parke & Buriel, 2006), it is possible that parents' lack of focus on girls' academic lives somehow permeates the Latina STEM pipeline. However, we did not find gender differences regarding parent modeling and identification between middle school girls and boys. Tests that include other sources of parent socialization are needed. Furthermore, it will be important to longitudinally examine whether academic self-efficacy plays a role in Latinas' abilities to carry out their 8<sup>th</sup> grade overall achievement levels into high school and college.

In terms of academic sources of socialization, middle school girls were found to model after their friends more than middle school boys, consistent with notions that females place a greater emphasis on interpersonal relationships (Maccoby, 1998) and work that finds that they engage in more social interactions than males (Rose & Rudolph, 2006). However, the role friends play in Latino lives is not often studied relative to European and African American youth (Way, Becker, & Greene, 2006). Therefore, it is important to further examine the links involving academic sources of socialization to better understand their process for Latino middle school students.

Additionally, adolescent girls reported to be significantly less encouraged by teachers than adolescent boys. Previous work addresses teachers' lower expectations of Latino students because of their ethnicity (Archer, DeWitt, & Willis, 2014; Carlone, Scott, & Lowder 2014); however, this work is limited, overall, and it is unclear whether Latino students feel encouraged by teachers further based on their gender. Therefore, future studies need to better address teacher encouragement among Latino adolescents, examine links between teacher encouragement and achievement, further examine gender as a moderator of this link. In other words, future work would greatly benefit for the examination of process or mechanisms that include teacher encouragement in the relation to academic outcomes.

Of course, the preliminary findings presented here are a snapshot of the Wave I adolescent data. It is important to recognize the interrelations among the individual academic characteristics and the family and school socialization agents. Furthermore, given that the identity process emerges in adolescence, future work necessitates the longitudinal work examining the interrelations and progressions of these constructs across time. The next steps

include testing regression models for the Wave I data as well as testing a prospective model using Wave I and Wave II data.

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Table 2.

*Correlations for Study Variables.*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1) Ac. commitment-M	1																	
2) Ac. commitment-S	0.29***	1																
3) Ac. identity-M	0.63***	0.23***	1															
4) Ac. identity-S	0.25***	0.69***	0.46***	1														
5) Ac. self-eff.	0.29***	0.29***	0.46***	0.48***	1													
6) Ac. aspirations	0.28***	0.16**	0.29***	0.18**	0.31***	1												
7) Ac. expectations	0.28***	0.13*	0.30***	0.21***	0.35***	0.70***	1											
8) Educational values	0.28***	0.26***	0.39***	0.43***	0.41***	0.28***	0.29***	1										
9) Grades-Math	0.11+	0.19**	0.19**	0.29***	0.26***	0.26***	0.26***	0.20**	1									
10) Grades-Science	0.25***	0.12+	0.38***	0.25***	0.39***	0.24***	0.27***	0.24***	0.44***	1								
11) Modeling-Fathers	0.19**	0.17**	0.24***	0.24***	0.22***	0.05	0.07	0.23***	0.14*	0.11+	1							
12) Modeling-Mothers	0.14*	0.08	0.22***	0.24***	0.28***	0.12+	0.10+	0.16**	0.07	0.01	0.47***	1						
13) Modeling-Peers	0.23***	0.06	0.20**	0.18**	0.31***	0.08	0.14*	0.10+	0.11+	0.15*	0.19**	0.30***	1					
14) Deid.-Fathers	-0.08	0.01	0.03	0.10+	0.11+	-0.05	-0.14*	0.12*	-0.14*	-0.18**	0.15*	0.22**	0.15*	1				
15) Deid.-Mothers	0.03	0.10+	0.08	0.15*	0.04	-0.01	-0.11+	0.11+	-0.09	-0.17**	0.14*	0.25***	0.10+	0.56***	1			
16) Deid.-Friends	0.08	0.16**	0.10+	0.19**	0.17**	0.01	-0.01	0.10+	-0.07	-0.12*	0.15*	0.25***	0.07	0.43***	0.42***	1		
17) School belonging	0.18**	0.23***	0.35***	0.44***	0.33***	0.05	0.19**	0.38***	0.22***	0.21**	0.21***	0.20**	0.29***	0.04	0.07	0.07	1	
18) Teacher enc.	-0.11+	-0.10+	-0.22***	-0.14*	-0.18**	-0.11+	-0.10+	-0.09	-0.10+	-0.12+	-0.11+	-0.18**	0.20**	-0.27***	-0.10	-0.14*	-0.27***	1

*Note:* Ac. = academic; M = math; S = science; eff. = efficacy, enc. = encouragement

+ = significant at the trend level; \*  $p < .05$ ; \*\*  $p < .01$ , \*\*\*  $p < .01$