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Latino adolescents' academic success: The role of discrimination, academic motivation, and gender

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Abstract

Guided by the academic resilience perspective, the current longitudinal study examined whether academic motivation mediated the relation between Latino adolescents' ($N = 221$) experiences with discrimination and their academic success. The potential moderating role of gender was also examined. Using multiple group analysis in structural equation modeling, findings indicated that perceived discrimination at Wave 2 significantly predicted academic motivation at Waves 2 and 3 for boys but not girls. Additionally, for boys, academic motivation significantly mediated the relation between perceived discrimination and academic success. Findings underscore the importance of considering the long-term implications of discrimination for Latino boys' academic success. Furthermore, findings encourage moving beyond the examination of gender differences in specific academic outcomes (e.g., academic success) and focusing on how the processes leading to academic success vary by gender.

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Keywords: Latino adolescents; Academic success; Academic motivation; Discrimination; Gender

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The Latino population is the largest ethnic minority group in the U.S. (Bernstein, 2008) and in 2003 over 2.75 million Latino adolescents were enrolled in high schools throughout the U.S. (U.S. Census Bureau, 2005). This representation in educational settings, however, does not translate into degrees attained, as almost half of Latinas (i.e., 47%) and Latinos (41%) over the age of 25 do not have a high school diploma (U.S. Census Bureau, 2007). The consequences of not completing high school are severe. For instance, Latino individuals without a high school degree earn \$5000 less, annually, and are more likely to live below the poverty line than their counterparts who have a high school degree (U.S. Census Bureau, 2005). These bleak consequences of not completing high school have prompted researchers to examine the factors associated with Latino adolescents' academic success.

In order to understand the factors that promote academic success among individuals who face adversity, researchers have turned to the academic resilience perspective. According to the academic resilience literature, academic risk factors are those that have the potential to impede academic success (Arellano & Padilla, 1996). For instance, several studies have identified experiences with discrimination as a significant risk factor for academic success (Martinez, DeGarmo, & Eddy, 2004; Neblett, Philip, Cogburn, & Sellers, 2006). However, researchers also explain that, despite exposure to risk factors such as discrimination, some adolescents manage to succeed academically (Arellano & Padilla). Thus, in addition to identifying risk factors, the academic resilience perspective focuses on factors that enable individuals to overcome these potential risks (i.e., resilience factors). For example, scholars have identified adolescents' academic motivation as a significant resilience factor that can promote positive academic outcomes (Anderson & Keith, 1997). Thus, the academic resilience perspective argues that it is important to consider not only factors that can impede academic success, but also those that can promote positive academic outcomes. Because previous findings have identified discrimination as a potential risk factor and academic motivation as a potential resilience factor, the current study examined the associations among Latino adolescents' experiences with discrimination, academic motivation, and academic success. Furthermore, given gender differences in the variables of interest that have emerged in previous work (Finch, Kolody, & Vega, 2000; Plunkett & Bámaca-Gómez, 2003), as well as traditional gender socialization patterns in Latino families (Azmitia & Brown, 2000; Valenzuela, 1999), which may introduce variability into the associations examined in the current study, we tested the potential moderating role of gender on the relations of interest.

Consistent with the academic resilience perspective, researchers have found that perceived discrimination is associated with academic outcomes among middle and high school adolescents from ethnic minority backgrounds (DeGarmo & Martinez, 2006; Eccles, Wong, & Peck, 2006; Katz, 1999; Martinez et al., 2004; Neblett et al., 2006; O'Connor, 1997; Ogbu & Simons, 1998; Wong, Eccles, & Sameroff, 2003). For instance, adolescents' experiences with discrimination have been associated with lower levels of academic motivation (Eccles et al., 2006; Wong et al., 2003), lower GPAs or grades (Eccles et al.; Martinez et al.; Neblett et al.; Wong et al.), lower levels of academic persistence (Neblett et al.), an increased likelihood of dropping out of school (Martinez et al.), higher levels of academic disengagement (Katz; Ogbu & Simons), and lower levels of academic well-being in general (DeGarmo & Martinez). Thus, an examination of discrimination is imperative when trying to gain a better understanding of the factors associated with academic success among ethnic minority youth.

While the majority of existing findings are based on African American youth or ethnic minorities in general (see work by [Martinez et al., 2004](#) for an exception), it is critical to also explore these relations among Latino youth, as existing work indicates that discrimination is a reality for many Latino adolescents. Specifically, studies have found that, compared to their non-Latino counterparts, Latino adolescents were more likely to experience discrimination both inside and outside of school settings ([Fisher, Wallace, & Fenton, 2000](#); [Martinez et al., 2004](#)) and report either personally experiencing discrimination or seeing other Latinos experiencing discrimination ([Martinez et al.](#)). Researchers have also found that experiences with discrimination seem to be different for Latino boys and girls ([Finch et al., 2000](#)). For instance, researchers have found that adult males reported higher levels of discrimination than females ([Finch et al., 2000](#); [Lopez, 1995](#)). Additionally, with adult participants from various ethnic backgrounds, researchers found that experiences with discrimination were more strongly related to outcomes for males than females ([Cunningham & Sagas, 2007](#)). Taken together, these findings suggest that (a) discrimination is salient in the lives of Latino adolescents, (b) it should be examined in relation to their academic outcomes, and (c) potential gender differences should be explored.

In addition to focusing on the role of discrimination in Latino adolescents' academic success, the current study also examined adolescents' academic motivation as a potential resilience factor. The academic resilience perspective indicates that resilience factors can influence the relation between risk factors and academic success in several ways, one of which is by serving as mediators between risk factors and outcomes ([Gutman, Sameroff, & Eccles, 2002](#); [Sameroff, 1999](#)). With regard to academic motivation mediating the association between discrimination and academic success, several studies have provided support for the direct association between discrimination and academic motivation among middle school, high school, and college students ([Gloria, Castellanos, Lopez, & Rosales, 2005](#); [Wong et al., 2003](#)), and between academic motivation and academic success among high school and college students ([Anderson & Keith, 1997](#); [Eccles et al., 2006](#); [Gloria et al., 2005](#); [Goodenow & Grady, 1993](#); [Robbins et al., 2004](#); [Rodriguez, 1996](#); [Torres & Solberg, 2001](#); [Wentzel, 1997](#)). Specifically, researchers have found that middle and high school students who reported more experiences with discrimination also reported a decrease in their academic motivation ([Wong et al., 2003](#)). Furthermore, in a meta-analysis of 109 studies, college students' level of motivation was consistently and positively related to school achievement, as measured by participants' GPAs ([Robbins et al.](#)). Additionally, utilizing a national dataset comprised of participants described as non-Asian minorities, researchers found that high school students' academic motivation was positively associated with academic achievement, such that as adolescents reported higher levels of academic motivation, their scores on standardized tests and other measures of academic ability also increased ([Anderson & Keith](#)).

Thus, existing studies have provided support for the associations between discrimination and academic motivation, and between academic motivation and academic outcomes. However, to our knowledge, only one study (i.e., [Eccles et al., 2006](#)) has examined the associations among these three variables simultaneously. In order to more accurately test the tenets of the academic resilience perspective, which imply that a resilience factor can influence the effect of a risk factor on an academic outcome, it is necessary to examine these associations simultaneously (i.e., statistically test for mediation) and it is ideal to examine these associations using longitudinal data ([Cole & Maxwell, 2003](#)). [Eccles et al.](#) examined the relation between African American adolescents' perceptions of discrimination and their academic outcomes. During the eighth grade,

adolescents' perceptions of their daily experiences with discrimination were negatively correlated with their academic motivation; as adolescents reported more daily experiences with discrimination they reported lower levels of academic motivation. In turn, academic motivation was positively related to their eighth grade GPA. These findings provided empirical support for the idea presented by Neblett et al. (2006) that experiences with discrimination would influence academic attitudes and beliefs, which in turn would influence academic success; however, in order to determine if these processes also exist for Latino youth, replication of these findings is needed. Although Eccles et al.'s study was longitudinal, these particular findings only included one wave of data. In the current study, we employed a longitudinal design, which provides a more rigorous examination of the hypothesized mediational process (Cole & Maxwell, 2003).

Although gender differences were not directly examined in Eccles et al.'s (2006) study, findings from studies on Latino adolescents' academic motivation point to considerable gender differences (Blair & Cobas, 2006; Plunkett & Bámaca-Gómez, 2003) and suggest that gender should be examined as a potential moderator. For instance, Latina adolescents tend to report significantly higher levels of academic motivation than Latino boys (Plunkett & Bámaca-Gómez). However, beyond mean level differences, studies have found gender differences in the strength of the relationship between certain variables and academic motivation. In one study, girls' academic motivation was significantly predicted by mothers' academic support, whereas boys' academic motivation was not (Alfaro, Umaña-Taylor, & Bámaca, 2006). In a second study, the positive association between speaking English at home and high school completion was significantly stronger for Latina females than their male counterparts (Blair & Cobas). It is possible that the gender differences have emerged as a result of the divergent gender socialization experiences of boys and girls in Latino families (Azmitia & Brown, 2000; Valenzuela, 1999). For instance, researchers argue that Latino parents are more likely to socialize their sons, compared to their daughters, to explore their extra-familial environments (e.g., extracurricular activities; Raffaelli & Ontai, 2004; Ramirez, 1989). With regard to the relationships of interest in the current study, it is possible that boys will be more affected than girls by their discrimination experiences outside of the home, given their divergent socialization experiences. Thus, we expected that the associations between each of these variables would be more strongly associated for boys than girls. That is, while higher levels of discrimination were expected to be associated with lower levels of academic motivation and lower levels of academic success among all adolescents, we expected these associations to be stronger for boys than girls.

Research model and hypotheses

Guided by the academic resilience perspective, the current study examined the longitudinal and concurrent associations among risk and resilience factors and Latino adolescents' academic success. The model tested in the current study was designed to examine whether Latino adolescents' experiences with discrimination would be directly and/or indirectly associated with academic success through academic motivation (see Fig. 1). We hypothesized that the relation between discrimination and academic success would be mediated by adolescents' academic motivation, such that adolescents who reported more experiences with discrimination would report lower levels of academic motivation and, in turn, lower levels of academic success. Furthermore, given existing empirical and theoretical work that emphasizes important gender

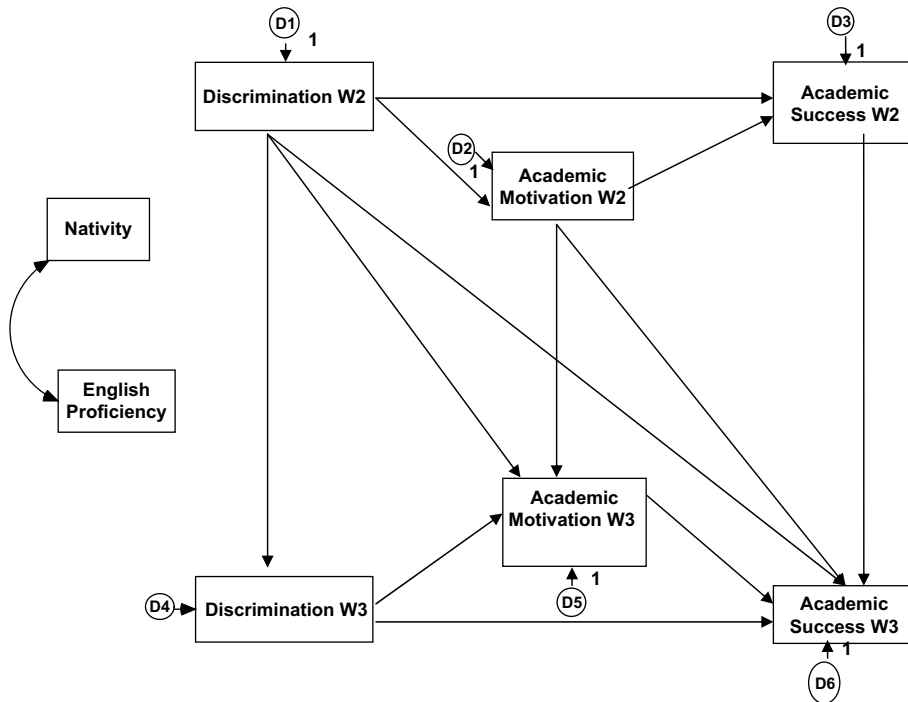


Fig. 1. Hypothesized model for boys and girls. Paths from control variables (i.e., nativity and English proficiency) to all variables of interest were omitted from the figure for ease of presentation but are included in all analyses (see Table 2).

socialization differences in Latino families, we hypothesized that the association between discrimination and academic motivation, and between discrimination and academic success, would be significantly stronger for boys than girls. Finally, based on previous findings, we introduced two control variables into all models: nativity and English proficiency. Existing work has documented that nativity is an important correlate of academic outcomes, such that being born in the U.S. is linked to lower levels of academic motivation (Fuligni, 1997), but higher levels of educational attainment (Zsembik & Llanes, 1996). Furthermore, findings indicate that English proficiency is positively associated with academic motivation (Plunkett & Bámaca-Gómez, 2003) and high school completion (Perreira, Harris, & Lee, 2006). Because nativity and English proficiency could introduce significant variation into the variables of interest in the current study, they were included as control variables in all analyses.

Method

Participants

Data for the current study were from a larger 4-year longitudinal study (Umaña-Taylor, Vargas-Chanes, Garcia, & Gonzales-Backen, 2008) that began in 2003, included assessments once per year, and focused on Latino adolescents' ethnic identity and academic success in 5 Midwestern high schools. The current study utilized data from Wave 1 (W1), Wave 2 (W2), and Wave 3 (W3)

because they contained the same measures of the variables of interest for the current study. A total of 323 adolescents participated in W1, 273 participated in W2, and 267 participated in W3. This represented 84.5% and 82.7% retention at Waves 2 and 3, respectively. Of the participants who completed W1, W2, and W3 ($n = 245$), 221 had complete data for the variables of interest in the current study.¹ Participants with complete data ($n = 221$) did not differ significantly from those without complete data ($n = 24$) in terms of gender, country of birth, perceptions of discrimination, and school reports of grade point averages (GPA; all $ps > 0.05$). However, participants with complete data were younger ($M = 15.22$) than those without complete data ($M = 15.51$; $t(320) = -3.11$, $p < 0.05$), although the effect size was minimal (i.e., mean difference was 0.28). Additionally, participants with complete data were more likely to report higher levels of academic motivation ($M = 3.16$) when compared to students without complete data ($M = 2.85$; $t(243) = -2.77$, $p < 0.01$).

During W1 data collection, adolescents in the current study ($N = 221$; 48.4% female) ranged in age from 14 to 17 years ($M = 15.23$, $SD = 0.73$) and reported being in 9th (55.7%) or 10th grade. A majority (79.6%) self-identified as being of Mexican-origin, although other Latino groups were represented (e.g., Cuban). Furthermore, while a majority of participants' mothers ($n = 135$; 61.1%) and fathers ($n = 147$; 68.1%) were born outside of the U.S., a majority of adolescents were born in the U.S. ($n = 156$; 70.6%).

Procedure

Adolescents were identified as Latino based on school records and, with the assistance of school personnel, the second author invited Latino students to an informational meeting at each school explaining the purpose of the study and the requirements of parental consent and youth assent. Students who returned signed parental consent and youth assent forms by a specified date completed a self-administered survey, which took approximately 45 min to complete. As an incentive for participating, adolescents received \$10 at W1, \$15 at W2, and \$20 at W3.

Measures

Discrimination

To assess the degree to which participants perceived to have experienced discrimination, a revised version of the Perceived Discrimination Scale (Whitbeck, Hoyt, McMorris, Chen, & Stubben, 2001) was used. Originally developed for use with American Indian adolescents, the measure was revised by replacing the words Native American with the words Hispanic/Latino. The scale consisted of 10 items (e.g., "How often has the police hassled you because you are Hispanic/Latino?") rated on a 4-point Likert scale, in which higher scores indicated greater levels of perceived discrimination. The measure obtained a Cronbach's alpha of 0.80 with a sample of American Indian adolescents (Whitbeck et al., 2001) and Cronbach's alphas of 0.90 (W2) and 0.91 (W3) with adolescents in the current study.

¹ Participants were excluded due to missing data on the following variables: nativity ($n = 1$), GPA W2 ($n = 16$), and GPA W3 ($n = 7$).

Academic motivation

Adolescents' academic motivation was assessed with the Academic Motivation Scale (Plunkett & Bámaca-Gómez, 2003). The five items (e.g., "I try hard in school") were scored on a 4-point Likert scale with anchors of *Strongly Disagree* (1) and *Strongly Agree* (4). Higher scores indicated higher levels of academic motivation. With a sample of Mexican-origin adolescents, the measure obtained a Cronbach's alpha of 0.71 (Plunkett & Bámaca-Gómez). In the current study, Cronbach's alphas were 0.78 (W2) and 0.82 (W3).

Academic success

To assess adolescents' academic success, participants' GPAs were obtained from school records. GPAs ranged from 0.52 to 4.22 (W2) and from 0.65 to 4.25 (W3), with 4.0 representing an A. GPAs over 4.0 indicated students' involvement in advanced placement classes in which grades were weighted higher.

Nativity

During the first wave of data collection, nativity was assessed utilizing participants' self-reported country of birth (0 = born outside of the U.S.; 1 = born in the U.S.). Twenty nine percent of participants were born outside of the U.S.

English language proficiency

Adolescents' English proficiency was assessed at W2 with a 6-item subscale from the Bidi-mensional Acculturation Scale (BAS) for Hispanics (Marín & Gamba, 1996). Utilizing a 4-point Likert scale, higher scores indicated greater proficiency with regard to reading, writing, and understanding English. The measure obtained a Cronbach's alpha of 0.93 with the current sample.

Results

Analytic strategy

We tested the hypothesized model using AMOS 6.0 (see Table 1 for means, standard deviations, and correlations for all variables in the model). The initial model examined the direct and indirect associations of experiences with discrimination, academic motivation, and academic success at W2 and W3 (see Fig. 1). In addition to simultaneously examining whether adolescents' perceptions of discrimination were indirectly related to adolescents' academic success via students' academic motivation concurrently and longitudinally (MacKinnon, Fairchild, & Fritz, 2007), the current model was specified according to the requirements set forth by Cole and Maxwell (2003) for examining indirect effects with two waves of data. Specifically, applied to the current study, Cole and Maxwell recommend examining the indirect effect of discrimination on academic success by modeling (a) the relation between discrimination at W2 and academic motivation at W3 controlling for adolescents' academic motivation at W2 and (b) the relation between academic motivation at W2 and academic success at W3 controlling for academic success at W2. Nativity and English proficiency were included in the model as control variables. Model fit was evaluated using several fit indices (i.e., χ^2 statistic, root mean square error of approximation (RMSEA),

Table 1

Means, standard deviations, and correlations for study variables by gender (boys, $n = 114$; girls, $n = 107$).

Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Nativity	0.72 (0.69)	0.45 (0.46)		0.38**	0.00	-0.11	-0.13	-0.02	-0.16	-0.10
2. English proficiency	3.55 (3.68)	0.59 (0.45)	0.53**		-0.16	0.02	0.013	-0.04	-0.03	0.10
3. Discrimination W2	1.69 (1.56)	0.58 (0.59)	0.00	0.01		0.04	-0.14	0.72**	0.01	-0.13
4. Academic motivation W2	3.08 (3.26)	0.53 (0.49)	-0.03	0.24*	-0.22*		0.28**	0.07	0.68**	0.28**
5. Academic success (GPA) W2	2.43 (2.83)	0.71 (0.70)	0.05	-0.07	-0.22*	0.35**		-0.06	0.36**	0.97**
6. Discrimination W3	1.72 (1.60)	0.62 (0.58)	0.06	0.04	0.72**	-0.27**	-0.29**		-0.06	-0.07
7. Academic motivation W3	3.08 (3.27)	0.53 (0.50)	0.08	0.20*	-0.14	0.65**	0.35**	-0.27**		0.41**
8. Academic success (GPA) W3	2.46 (2.85)	0.71 (0.71)	0.06	-0.07	-0.22*	0.35**	0.98**	-0.27**	0.40**	

Note. * $p < 0.05$; ** $p < 0.01$; correlations for boys are reported below the diagonal and correlations for girls are reported above the diagonal. Girls' means and standard deviations are reported in parentheses. W2 = Wave 2; W3 = Wave 3.

goodness of fit index (GFI), normed fit index (NFI), and comparative fit index (CFI)). Acceptable model fit was determined by examining a combination of indices such as a χ^2/df ratio below 3, RMSEA values below 0.08, and values of 0.95 or higher for the GFI, NFI, and CFI (Carmines & McIver, 1981; Hatcher, 1994; Kline, 2005).

To examine potential gender differences, analyses were conducted using multiple group structural equation modeling, which tests whether estimates of model parameters (i.e., path coefficients) vary across groups (Kline, 2005). Using multiple group modeling, the initial model, with no equality constraints imposed on any parameter estimates, was tested separately for each gender. Once the model fit was evaluated by the criteria outlined above, cross-group equality constraints on the structural weights were imposed on subsequent models. By setting equality constraints, equal estimates of the parameters are derived for both groups (e.g., boys and girls) and the models can then be compared to determine whether the model with constraints fits the data better than a model with no constraints (Kline, 2005). Specifically, the χ^2 and degrees of freedom for the two models are compared by calculating the χ^2 difference value. A statistically significant χ^2 difference value indicates a significant difference in model fit; fit indices are then examined to identify the better fitting model. Finally, follow-up analyses were conducted to test the mediating role of academic motivation (i.e., academic motivation was hypothesized to mediate the effect of perceived discrimination on academic success).

Multigroup analyses to examine gender differences

Initial model

Multigroup analyses indicated that the initial model (i.e., unconstrained model) provided a good fit to boys' and girls' data, but several gender differences emerged (see Table 2). With regard to control variables, paths from nativity to academic motivation at W2 and academic success at W2 and the path from English proficiency to academic motivation at W2 were significant for boys, but not girls. Additionally, the path from nativity to academic success at W3

Table 2
Standardized estimates for all models (standard errors in parentheses).

Parameter estimated	Initial model ^a	Alternate initial model ^b	Constrained model 1 ^c	Constrained model 2 ^d
Boys (<i>n</i> = 114)				
Nativity → discrimination W2	-0.08 (0.22)	-0.08 (0.22)	-0.08 (0.22)	-0.06 (0.15)
Nativity → academic motivation W2	-0.22 (0.12)*	-0.22 (0.12)*	-0.22 (0.12)*	-0.22 (0.12)*
Nativity → academic success W2	0.21 (0.16)*	0.21 (0.16)*	0.10 (0.15)	0.10 (0.15)
Nativity → discrimination W3	0.10 (0.13)	0.10 (0.13)	0.10 (0.13)	0.08 (0.08)
Nativity → academic motivation W3	0.14 (0.10)	0.14 (0.10)	0.14 (0.10)	0.02 (0.06)
Nativity → academic success W3	0.01 (0.03)	0.00 ^e	0.00 ^e	0.00 ^e
English proficiency → discrimination W2	-0.09 (0.62)	-0.09 (0.62)	-0.09 (0.62)	-0.14 (0.47)
English proficiency → academic motivation W2	0.31 (0.35)**	0.31 (0.35)**	0.31 (0.35)**	0.31 (0.35)**
English proficiency → academic success W2	-0.30 (0.46)**	-0.30 (0.46)**	-0.09 (0.34)	-0.10 (0.34)
English proficiency → discrimination W3	0.06 (0.37)	0.06 (0.37)	0.06 (0.37)	0.05 (0.26)
English proficiency → academic motivation W3	0.00 (0.29)	0.00 (0.29)	-0.01 (0.28)	0.01 (0.20)
English proficiency → academic success W3	-0.02 (0.10)	-0.01 (0.09)	-0.02 (0.09)	-0.02 (0.07)
Discrimination W2 → academic motivation W2	-0.19 (0.05)*	-0.19 (0.05)*	-0.19 (0.05)*	-0.19 (0.05)*
Discrimination W2 → academic success W2	-0.11 (0.07)	-0.11 (0.07)	-0.11 (0.07)	-0.10 (0.05)
Discrimination W2 → discrimination W3	0.53 (0.06)***	0.53 (0.06)***	0.53 (0.04)***	0.53 (0.04)***
Discrimination W2 → academic motivation W3	0.21 (0.05)*	0.21 (0.05)*	0.20 (0.05)**	0.18 (0.05)*
Discrimination W2 → academic success W3	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.01)
Academic motivation W2 → academic success W2	0.41 (0.12)***	0.41 (0.12)***	0.34 (0.09)***	0.34 (0.09)***
Academic motivation W2 → academic motivation W3	0.66 (0.07)***	0.66 (0.07)***	0.67 (0.05)***	0.67 (0.05)***
Academic motivation W2 → academic success W3	-0.03 (0.03)	-0.04 (0.03)	-0.04 (0.03)	-0.05 (0.03)*
Academic success W2 → academic success W3	0.97 (0.02)***	0.97 (0.02)***	0.97 (0.02)***	0.97 (0.02)***
Discrimination W3 → academic motivation W3	-0.21 (0.07)**	-0.21 (0.07)**	-0.20 (0.07)**	-0.18 (0.07)*
Discrimination W3 → academic success W3	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)
Academic motivation W3 → academic success W3	0.09 (0.03)***	0.09 (0.03)***	0.10 (0.03)***	0.10 (0.03)***
Girls (<i>n</i> = 107)				
Nativity → discrimination W2	-0.05 (0.20)	-0.05 (0.20)	-0.05 (0.20)	-0.06 (0.15)
Nativity → academic motivation W2	-0.14 (0.11)	0.00 ^e	0.00 ^e	0.00 ^e
Nativity → academic success W2	-0.19 (0.15)	0.00 ^e	0.00 ^e	0.00 ^e
Nativity → discrimination W3	0.08 (0.11)	0.08 (0.11)	0.08 (0.11)	0.10 (0.08)
Nativity → academic motivation W3	-0.08 (0.08)	-0.09 (0.08)	-0.09 (0.08)	0.02 (0.06)
Nativity → academic success W3	0.05 (0.04)*	0.05 (0.04)*	0.05 (0.04)*	0.04 (0.03)
English proficiency → discrimination W2	-0.19 (0.70)	-0.19 (0.70)	-0.19 (0.70)	-0.13 (0.47)
English proficiency → academic motivation W2	0.08 (0.39)	0.00 ^e	0.00 ^e	0.00 ^e
English proficiency → academic success W2	0.20 (0.53)*	0.13 (0.48)	-0.08 (0.34)	-0.08 (0.34)
English proficiency → discrimination W3	0.02 (0.38)	0.02 (0.38)	0.02 (0.38)	0.04 (0.26)

(continued on next page)

Table 2 (continued)

Parameter estimated	Initial model ^a	Alternate initial model ^b	Constrained model 1 ^c	Constrained model 2 ^d
English proficiency → Academic motivation W3	−0.04 (0.29)	−0.02 (0.29)	−0.02 (0.29)	0.01 (0.20)
English proficiency → academic success W3	−0.04 (0.13)	−0.04 (0.13)	−0.04 (0.13)	−0.02 (0.07)
Discrimination W2 → academic motivation W2	0.07 (0.05)	0.00 ^e	0.00 ^e	0.00 ^e
Discrimination W2 → academic success W2	−0.05 (0.07)	−0.04 (0.07)	−0.08 (0.07)	−0.10 (0.05)
Discrimination W2 → discrimination W3	0.57 (0.05)***	0.57 (0.05)***	0.57 (0.04)***	0.57 (0.04)***
Discrimination W2 → academic motivation W3	−0.06 (0.05)	0.00 ^e	0.00 ^e	0.00 ^e
Discrimination W2 → academic success W3	−0.02 (0.02)	−0.02 (0.02)	−0.02 (0.02)	−0.02 (0.01)
Academic motivation W2 → academic success W2	0.26 (0.13)**	0.28 (0.13)**	0.30 (0.09)***	0.30 (0.09)***
Academic motivation W2 → academic motivation W3	0.68 (0.07)***	0.67 (0.07)***	0.66 (0.05)***	0.66 (0.05)***
Academic motivation W2 → academic success W3	−0.06 (0.05)	−0.06 (0.05)	−0.05 (0.04)	−0.04 (0.03)*
Academic success W2 → academic success W3	0.97 (0.02)***	0.97 (0.02)***	0.96 (0.02)***	0.96 (0.02)***
Discrimination W3 → academic motivation W3	−0.08 (0.07)	0.00 ^e	0.00 ^e	0.00 ^e
Discrimination W3 → academic success W3	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.02 (0.02)
Academic motivation W3 → academic success W3	0.11 (0.04)***	0.11 (0.04)***	0.09 (0.03)***	0.09 (0.03)***
Fit indices				
χ^2	20.12	28.67	38.14	46.21
df	7	14	20	31
χ^2 /df ratio	2.87	2.05	1.91	1.50
RMSEA	0.09	0.07	0.06	0.05
GFI	0.98	0.97	0.96	0.95
CFI	0.99	0.99	0.98	0.99
NFI	0.98	0.97	0.96	0.96

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^a Model with no imposed constraints.

^b Paths that were significant for one gender but not the other set to zero.

^c Paths that were significant for both boys and girls were constrained to be equal.

^d Paths that were not significant across groups constrained to be equal.

^e Path set to zero.

was significant for girls, but not boys. With regard to the key variables in this study, paths from perceived discrimination at W2 to academic motivation at W2 and W3 were found to be statistically significant for boys but not girls. In addition, the path from perceived discrimination at W3 to academic motivation at W3 was found to be statistically significant for boys only. Thus, past and current perceived discrimination predicted the academic motivation of boys, but not girls. Paths between academic motivation and academic success at W2, as well as the relation between academic motivation and academic success at W3, were statistically significant (i.e., cross-sectional paths) for both groups.

Given that the initial model included several path coefficients that were statistically significant for only one gender, an alternate initial model was estimated in which paths were set to zero for the gender in which the paths were not significant and freely estimated for the gender in which the paths were significant (Byrne, 2001). Results indicated that the alternate initial model was a good fit to the data. Thus, this model became the comparison model for all further analyses (see Figs. 2–3).

Models with equality constraints

To examine whether path coefficients were equivalent for boys and girls, a constrained model (i.e., Constrained Model 1) that set equality constraints on all 5 path coefficients that were

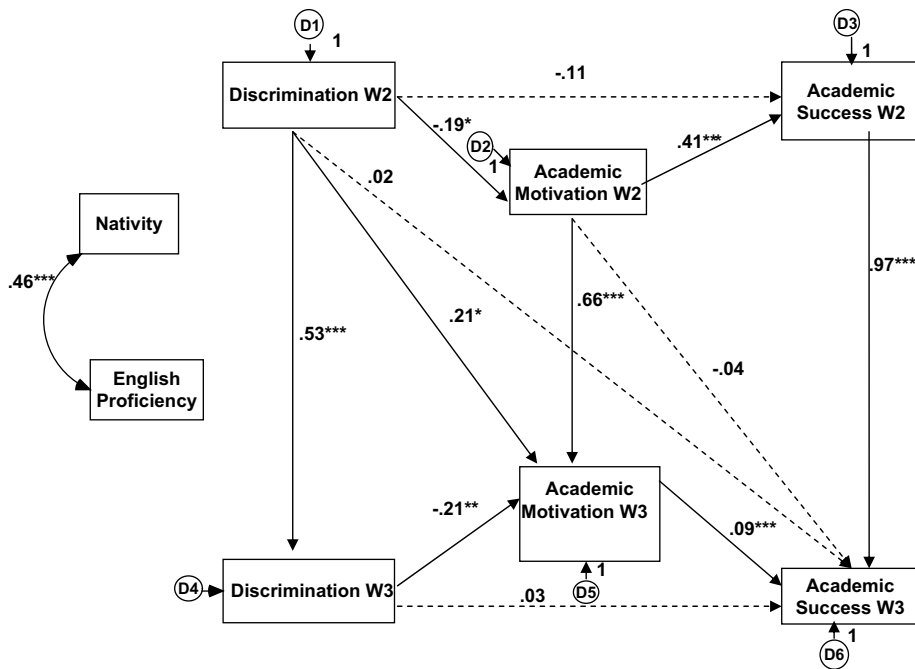


Fig. 2. Alternate initial model for boys (non-significant paths set to zero when paths were statistically significant for girls only. All other paths freely estimated). Notes. Standardized coefficients reported. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Paths from control variables (i.e., nativity and English proficiency) to all variables of interest were omitted from the figure for ease of presentation but are included in all analyses (see Table 2.).

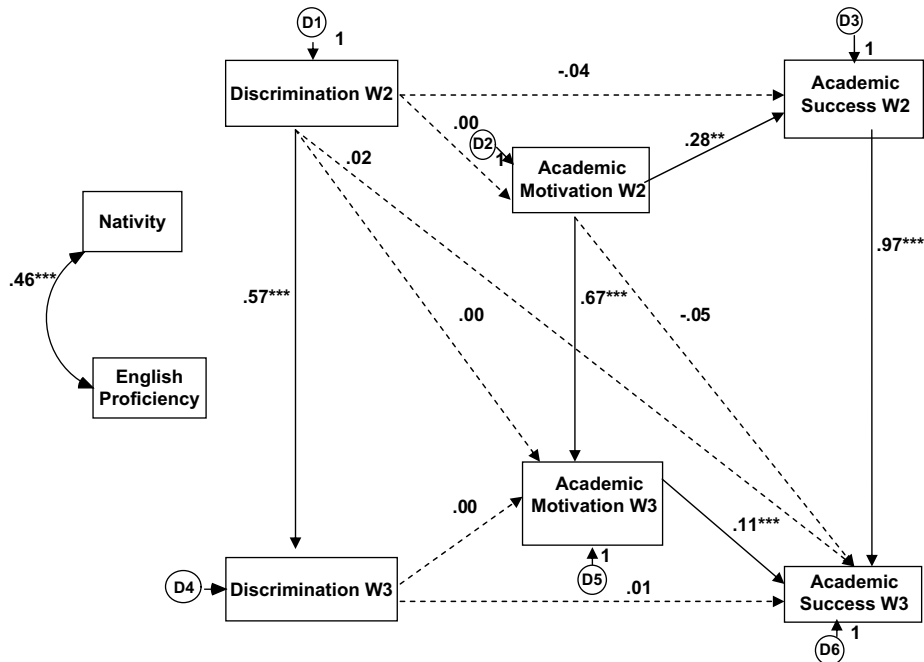


Fig. 3. Alternate initial model for girls (non-significant paths set to zero when they were statistically significant for boys only. All other paths freely estimated). Notes. Standardized coefficients reported. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Paths from control variables (i.e., nativity and English proficiency) to all variables of interest were omitted from the figure for ease of presentation but are included in all analyses (see Table 2).

statistically significant for both boys and girls was tested. Findings indicated that this model was a good fit to the data (see Table 2). Comparison of the alternate initial model and Constrained Model 1 indicated that the models were not significantly different from one another ($\chi^2_{\text{difference}}(6) = 9.47, p > 0.05$; Kline, 2005), indicating that setting equality constraints for the 5 paths was acceptable and, thus, that the 5 path coefficients were equivalent across gender groups (see Table 2).

To further test this model and the equivalence across groups, a model with additional constraints was tested in which path coefficients that were not statistically significant for both boys and girls were constrained to be equal across gender (i.e., Constrained Model 2). This model was compared against the alternate initial model and the χ^2 difference value was not statistically significant ($\chi^2_{\text{difference}}(17) = 17.53, p > 0.05$), suggesting that both significant and non-significant paths were equivalent across gender groups (see Table 2).

Academic motivation as a mediator – follow-up analyses

Follow-up mediation analyses were conducted only for boys, given that the paths including perceived discrimination were statistically significant only in the boys' data. Three models (i.e., Mediation Model 1, 2, and 3) were tested and compared to the alternate initial model. Mediation Model 1 examined whether the relation between perceived

discrimination at W2 and academic success at W2 was mediated by academic motivation at W2. Mediational Model 2 examined whether the relation between perceived discrimination at W3 and academic success at W3 was mediated by academic motivation at W3. Mediational Model 3 included the variables of interest longitudinally and examined the total indirect effect of perceived discrimination at W2 on academic success at W3. That is, the model examined whether the relation between perceived discrimination at W2 and academic success at W3 was mediated by academic motivation at W2 and W3, academic success at W2, and perceived discrimination at W3.

Table 3
Standardized estimates for boys' mediation models (standard errors in parentheses).

Parameter estimated	Alternate initial model ^a	Mediation model 1 ^b	Mediation model 2 ^c	Mediation model 3 ^d
Nativity → discrimination W2	0.00	0.00	0.00	0.00
Nativity → academic motivation W2	−0.23 (0.12)*	−0.23 (0.12)*	−0.23 (0.12)*	−0.23 (0.12)*
Nativity → academic success W2	0.23 (0.16)*	0.21 (0.16)*	0.23 (0.16)*	0.23 (0.16)*
Nativity → discrimination W3	0.00	0.00	0.00	0.00
Nativity → academic motivation W3	0.00	0.00	0.00	0.00
Nativity → academic success W3	0.00	0.00	0.00	0.00
English proficiency → discrimination W2	0.00	0.00	0.00	0.00
English proficiency → academic motivation W2	0.33 (0.35)**	0.33 (0.35)**	0.33 (0.35)**	0.33 (0.35)**
English proficiency → academic success W2	−0.31 (0.47)**	−0.31 (0.46)**	−0.31 (0.47)**	−0.31 (0.47)**
English proficiency → discrimination W3	0.00	0.00	0.00	0.00
English proficiency → academic motivation W3	0.00	0.00	0.00	0.00
English proficiency → academic success W3	0.00	0.00	0.00	0.00
Discrimination W2 → academic motivation W2	−0.19 (0.05)*	−0.19 (0.05)*	−0.19 (0.05)*	−0.19 (0.05)*
Discrimination W2 → academic success W2	0.00	−0.11 (0.07)	0.00	0.00
Discrimination W2 → discrimination W3	0.51 (0.06)***	0.51 (0.06)***	0.51 (0.06)***	0.51 (0.06)***
Discrimination W2 → academic motivation W3	0.17 (0.05)*	0.17 (0.05)*	0.17 (0.05)*	0.17 (0.05)*
Discrimination W2 → academic success W3	0.00	0.00	0.00	0.01 (0.01)
Academic motivation W2 → academic success W2	0.43 (0.12)***	0.41 (0.12)***	0.43 (0.12)***	0.43 (0.12)***
Academic motivation W2 → academic motivation W3	0.65 (0.07)***	0.65 (0.07)***	0.65 (0.07)***	0.65 (0.07)***
Academic motivation W2 → academic success W3	0.00	0.00	0.00	0.00
Academic success W2 → academic success W3	0.97 (0.02)***	0.97 (0.02)***	0.97 (0.02)***	0.97 (0.02)***
Discrimination W3 → academic motivation W3	−0.18 (0.07)*	−0.18 (0.07)*	−0.18 (0.07)*	−0.18 (0.07)*
Discrimination W3 → academic success W3	0.00	0.00	0.03 (0.02)	0.00
Academic motivation W3 → academic success W3	0.06 (0.03)***	0.06 (0.03)**	0.06 (0.03)***	0.06 (0.03)**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^a The model without direct paths from discrimination to academic success.

^b The model with the direct path between Discrimination W2 and Academic Success W2.

^c The model with the direct path between Discrimination W3 and Academic Success W3.

^d The model with the direct path between Discrimination W2 and Academic Success W3.

Procedures outlined by Holmbeck (1997) to test mediating effects using SEM were followed to examine whether the relation between perceived discrimination (i.e., X) and academic success (i.e., Y) was fully mediated by academic motivation (i.e., M). Specifically, we compared a model where path C (i.e., the direct X → Y path) was constrained to zero to a model in which path C was estimated. The chi-square difference test was then examined. A non-significant chi-square difference indicates that mediation is present, as including path C (i.e., the direct path) does not improve model fit.

Mediational model 1 (mediation at W2)

Fit statistics for the alternate initial model with boys' data indicated adequate model fit (χ^2 (15, $N = 114$) = 27.40, $p < 0.01$; RMSEA = 0.09; GFI = 0.95; χ^2/df ratio = 1.83). As described above, this model was compared to a model in which path C (i.e., from perceived discrimination at W2 to academic success at W2) was freely estimated (see Table 3 and Fig. 4). The comparison of models was not statistically significant (Mediational Model 1 χ^2 (14, $N = 114$) = 25.85; RMSEA = 0.09; GFI = 0.95; χ^2/df ratio = 1.85; $\chi^2_{\text{difference}}$ (1) = 1.55, *ns*), indicating that adding the direct path from perceived discrimination at W2 to academic success at W2 did not improve model fit (i.e., path C was not statistically significant). Thus, the relation between perceived discrimination at W2 and academic success at W2 was fully mediated by academic motivation at W2.

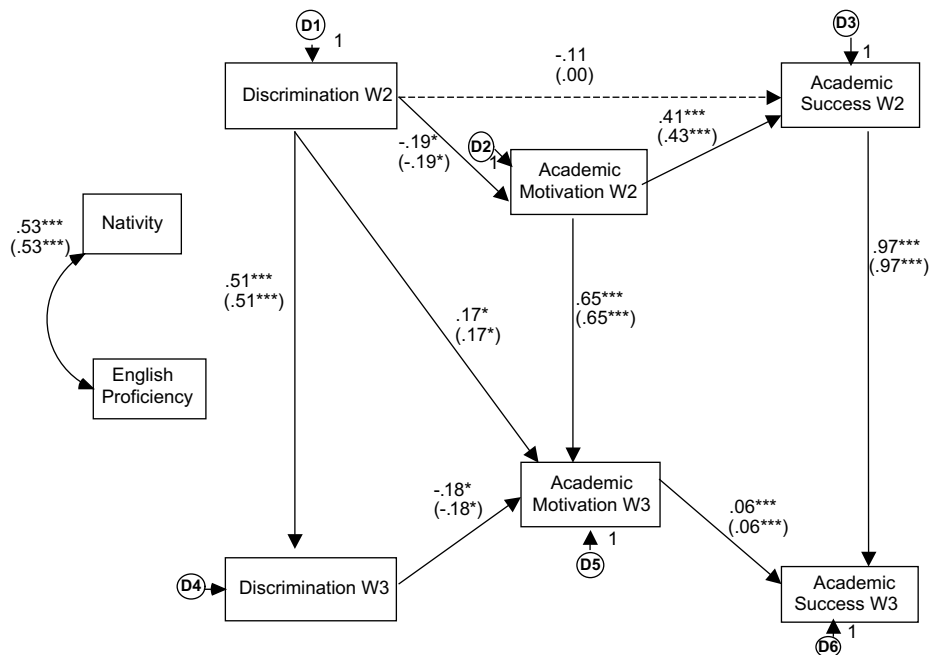


Fig. 4. Mediation Model 1. Note. Standardized coefficients reported. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Numbers in parentheses are the standardized estimates for the model without the direct path between discrimination W2 and academic success W2 (indicated by the dashed line).

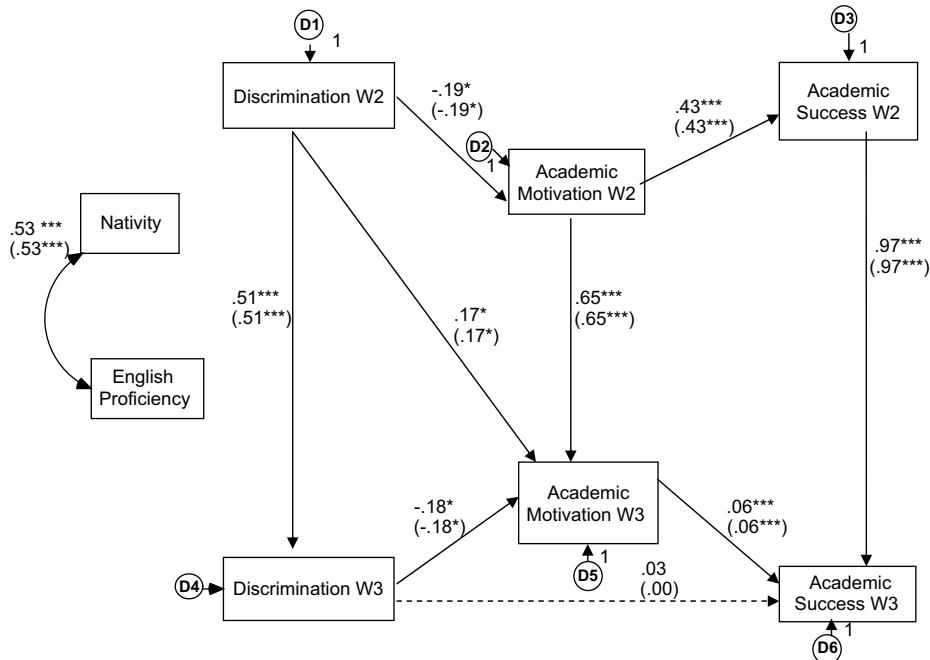


Fig. 5. Mediation Model 2. Note. Standardized coefficients reported. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Numbers in parentheses are the standardized estimates for the model without the direct path between discrimination W3 and academic success W3 (indicated by the dashed line).

Mediation model 2 (mediation at W3)

Similar analyses were conducted to test for mediation at W3 (see Table 3 and Fig. 5). Comparison of models (i.e., alternate initial model and Mediation Model 2 ($\chi^2(14, N = 114) = 25.62$; RMSEA = 0.09; GFI = 0.95; χ^2/df ratio = 1.83)) was not statistically significant ($\chi^2_{\text{difference}}(1) = 1.77, ns$), indicating that adding the direct association did not improve model fit. Thus, the relation between W3 perceived discrimination and W3 academic success was fully mediated by W3 academic motivation.

Mediation model 3 (longitudinal mediation)

A final mediation model was examined to test for mediation longitudinally. That is, we examined whether the longitudinal relation between perceived discrimination at W2 and academic success at W3 was mediated simultaneously by academic motivation at W2 and W3, academic success at W2, and perceived discrimination at W3 (see Table 3 and Fig. 6). Comparison of models (i.e., alternate initial model and Mediation Model 3 ($\chi^2(14, N = 114) = 27.26$; RMSEA = 0.09; GFI = 0.95; χ^2/df ratio = 1.95)) was not statistically significant ($\chi^2_{\text{difference}}(1) = 0.11, ns$), indicating that adding the direct longitudinal association did not improve model fit. Thus, the relation between W2 perceived discrimination and W3 academic success was fully mediated by W2 academic motivation, W2 academic success, W3 academic motivation, and W3 perceived discrimination.

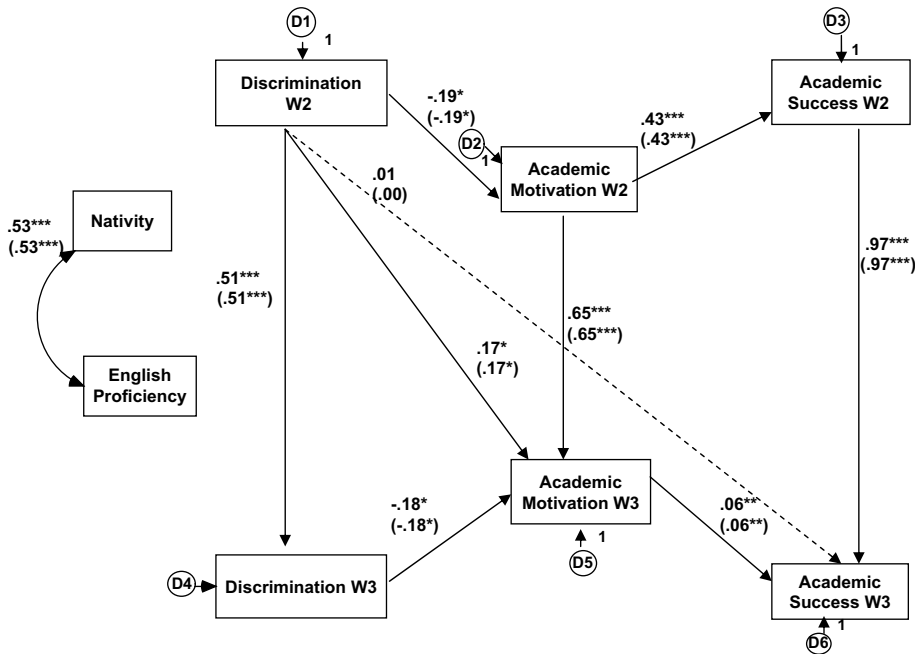


Fig. 6. Mediation Model 3. Note. Standardized coefficients reported. $*p < 0.05$; $**p < 0.01$; $***p < 0.001$. Numbers in parentheses are the standardized estimates for the model without the direct path between discrimination W2 and academic success W3 (indicated by the dashed line).

Discussion

The current study utilized the academic resilience perspective (Arellano & Padilla, 1996) to examine the relations among Latino adolescents’ experiences with discrimination, academic motivation, and academic success. We hypothesized that the relation between discrimination and academic success would be mediated by adolescents’ academic motivation, such that adolescents who reported more experiences with discrimination would report lower levels of academic motivation and, in turn, lower levels of academic success. Additionally, we hypothesized that the association between discrimination and academic motivation, and between discrimination and academic success, would be significantly stronger for boys than girls. Our hypotheses were partially supported as findings indicated that (a) discrimination was related to academic motivation only for boys, (b) academic motivation was positively related to Latino boys’ and girls’ concurrent academic success (i.e., GPA), and (c) discrimination was indirectly associated with boys’ academic success through their academic motivation concurrently and longitudinally. Prior to discussing these findings and the implications of this work, it is important to acknowledge the limitations of the study.

First, because Latino subgroups are characterized by diverse backgrounds (e.g., racial composition and reception upon entry to the U.S.; Araújo & Borrello, 2006; Umaña-Taylor & Fine, 2001) and the current sample was primarily of Mexican-origin, the generalizability of these findings may be limited to Mexican-origin adolescents who comprised the majority of our sample.

For instance, given that Latinos are of multiple racial backgrounds (e.g., Black, Indigenous, White) and that Latinos with darker skin are more likely to be discriminated against (Araújo & Borrello), it may be that adolescents who are more likely to be of African descent (e.g., Dominican) experience more discrimination due to their skin color (Araújo & Borrello). Thus, it is possible that experiences with discrimination are more salient to Afro-Latino adolescents. Future research should test the generalizability of these findings with other Latino subgroups in order to examine if discrimination is more salient to Latinos with darker skin and, potentially, has a stronger influence on academic outcomes. Additionally, it should be noted that academic success was assessed utilizing school reports of adolescents' cumulative GPA, rather than the GPA adolescents attained for the specific academic year. This is a potential limitation when examining the influence of GPA at W2 on GPA at W3 as the W3 GPA was dependent upon the W2 GPA. Examining GPA for specific academic years may yield different results. Despite these limitations, this study contributes to our understanding of the relations between discrimination, academic motivation, and academic success in a number of ways.

Discrimination and academic motivation

Consistent with our hypothesis, the current study found that gender moderated the relation between adolescents' experiences with discrimination and academic motivation. Specifically, experiences with discrimination were negatively associated with academic motivation, both concurrently and longitudinally, for boys, but not girls. Our findings are consistent with those of researchers who have examined gender differences in the relation between perceived discrimination and self-esteem, as they found that a negative relation emerged between perceived discrimination and self-esteem for males but not for females (Cassidy, O'Connor, Howe, & Warden, 2004). In addition, our findings highlight the importance of evaluating the cultural appropriateness of applying existing theoretical frameworks that were developed with a specific cultural group to a culturally distinct population. For instance, the current study was, in part, guided by previous research conducted with African Americans (e.g., Ogbu & Simons, 1998). Based on this work, we hypothesized that adolescents' experiences with discrimination would be negatively associated with academic motivation. Specific to the Latino population, however, it was important to consider unique cultural values and experiences (e.g., gender socialization), and expand the existing framework to incorporate gender as a significant moderator in the model to be tested. In fact, this cultural variation proved to be important in our findings.

Researchers have posited that traditional gender socialization practices may account for gender differences that have emerged because adolescent boys are given more independence to explore their surroundings and girls are more likely to be limited to household activities (Raffaelli & Ontai, 2004). This may be especially pertinent given that the current study focused on Latino adolescents, and researchers have noted that Latino parents are likely to socialize their children according to traditional gender roles (Raffaelli & Ontai). Thus, as Latino parents socialize their children to take on traditional gender roles, they may be socializing their girls toward placing more importance on their families and socializing their boys toward placing more importance on and taking ownership of the world outside of their families (Bámaca, Umaña-Taylor, Shin, & Alfaro, 2005; Raffaelli & Ontai; Ramirez, 1989). As a consequence of parents socializing their boys toward taking more ownership of the world outside their family, boys' psychological well-

being may be more susceptible to contextual factors such as discrimination, when compared to girls' psychological well-being.

Future researchers should examine the relation between discrimination and perceived barriers to academic success. It may be that, in taking more ownership of the outside world, boys are more likely to view perceived discrimination as a barrier to educational success. In fact, researchers have found that high school boys of European and Mexican decent reported that barriers to academic success, including discrimination, were more likely to impede their ability to achieve their goals when compared to adolescent girls (McWhirter, 1997). These beliefs may, in turn, influence adolescent boys' academic motivation.

The findings with regard to gender moderation are particularly important to consider when designing programs to promote academic success among Latino adolescents because they underscore the need to implement programs that tailor components to adolescents' gender. Specifically, schools should implement programs that emphasize strategies for coping with discrimination for Latino adolescent boys given that researchers have found that coping with discrimination is an important process for healthy adolescent development (Neblett et al., 2006; Spencer, Dupree, & Hartmann, 1997). Furthermore, one study with Latino adolescents demonstrated that ethnic identity may facilitate adolescents' abilities to cope with discrimination (Umaña-Taylor et al., 2008); thus, program developers may want to consider implementing programs that promote ethnic identity among Latino boys, in an effort to enhance boys' ability to cope with stressors such as discrimination.

Academic motivation and academic success

Based upon the notion that academic motivation can serve as a resilience factor and promote positive academic outcomes, the current study examined the relation between Latino adolescents' academic motivation and their academic success (i.e., GPA). Higher levels of academic motivation were associated with higher GPAs for boys and girls. These findings were limited to concurrent analyses (i.e., W2 did not predict W3). This finding was unexpected, as previous research has found academic motivation to predict academic outcomes longitudinally. For instance, Baker (2003) found that academic motivation predicted university students' GPAs one year later. It is important to note, however, that researchers who have found these relations have not included data from previous and current time points. Thus, when utilizing data from both W2 and W3, academic motivation (W2) only indirectly influenced academic success (W3) through academic success (W2), suggesting that the relation between academic motivation and academic success is correlational in nature rather than longitudinal. A possible explanation for this finding is that the strength of the predictive ability of GPA from previous waves overpowers the predictive ability of academic motivation such that GPA at previous waves accounts for most of the variation in GPA at a later time. This is a likely explanation for the current study given that academic success was measured utilizing adolescents' cumulative GPA. That is, adolescents' GPA at W2 was utilized to calculate GPA at W3 resulting in a robust correlation between these variables. As a consequence of calculating GPA in this way, the relation between GPA at W2 and GPA at W3 may be masking the relation between academic motivation at W2 and academic success at W3. Thus, it will be important for researchers to assess both cumulative GPA and GPA from the specific academic year in future studies.

Discrimination and academic success

Consistent with the theoretical notion that promotive factors enable individuals to become academically successful, the concurrent relation between experiences with discrimination and academic success was fully mediated by boys' academic motivation. Boys' experiences with discrimination indirectly influenced adolescents' concurrent academic success via their concurrent academic motivation. Thus, for both waves of data, as Latino adolescent boys experienced higher levels of discrimination, they reported lower levels of academic motivation and, in turn, lower GPAs. These findings were replicated with longitudinal data. That is, while discrimination was not directly related to boys' GPAs one year later, discrimination was indirectly related to boys' academic success one year later through boys' academic motivation. This finding for adolescent boys supports the idea that the relation between discrimination and academic success should be mediated by academic attitudes and beliefs (Neblett et al., 2006) and extends previous work conducted with African American adolescents (Eccles et al., 2006) to Latino adolescents. Furthermore, by examining the concurrent and longitudinal effect of discrimination on academic success, the current study begins to fill a gap in the literature highlighted by Neblett et al. who advocate for an examination of the mediating role of academic attitudes and beliefs in the relation between discrimination and academic success.

Suggestions for future research

The current findings emphasize the need for researchers to further explore the potential interactive nature of gender, nativity, and Latino adolescents' academic outcomes. For example, although nativity was not associated with girls' academic motivation or academic success during W2, boys born in the U.S. reported lower levels of academic motivation and higher GPAs when compared to boys born outside of the U.S. The findings for boys are in line with previous work in which Latino adolescents' generational status was negatively related to academic motivation (Fuligni, 1997) and positively related to their academic success (Rong & Preissle, 1998). What is unclear, however, is why these processes were not replicated for girls. Further research is needed to determine why nativity appears to introduce significant variability into these relations for boys, but not girls.

Gender differences also emerged with respect to the association between English proficiency and Latino adolescents' academic outcomes. For example, girls' academic motivation at W2 was not associated with their proficiency in English; however, boys with higher English proficiency tended to report higher levels of academic motivation at W2. Finally, while English proficiency was significantly related to both boys' and girls' academic success at W2, the direction of the association differed. Boys with higher English proficiency reported lower GPAs compared to boys with lower English proficiency. Conversely, girls with higher English proficiency reported higher GPAs when compared to girls with lower English proficiency. Further research is needed to better understand these findings. One avenue for future research is to explore English proficiency in conjunction with Spanish proficiency, which would allow for an examination of potential gender differences in the protective function of bilingualism (i.e., high levels of English and Spanish proficiency; Lutz, 2004; Rong & Preissle, 1998). For instance, it may be that the girls in the current study were proficient in both English and Spanish and their bilingual skills aided their academic success.

Additionally, it should be noted that the current study examined discrimination as a predictor of academic motivation and academic success; however, it is possible that adolescents who are doing well in school and are highly academically motivated perceive fewer acts of discrimination against them. For instance, one study found that adolescents' with high levels of academic motivation and higher GPAs reported higher levels of emotional functioning, as measured by a lack of depression and anger (Roeser, Eccles, & Sameroff, 1998), and a second study found that adolescents with higher depressive/anxiety scores reported higher levels of perceived discrimination (Phinney, Madden, & Santos, 1998). Integration of these findings suggests that it may be worthwhile to explore the potential bidirectional associations among academic motivation, academic success, and perceptions of discrimination.

In closing, the current study contributes to the literature by examining the longitudinal relations among Latino adolescents' experiences with discrimination, academic motivation, and academic success, while examining the moderating role of gender. The current study moves beyond the examination of mean level differences on individual variables, such as discrimination and academic motivation, and focuses on how processes involving these variables vary by gender.

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