

*Effects of Perceived Discrimination on Mexican-Origin Adolescent Outcomes:
A Parallel Mediation Analysis*

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Abstract

This study used Hayes Process Macro for SPSS version 29 to conduct a parallel mediation regression analysis examining the direct and indirect influence of adolescent perceptions of discrimination on academic outcomes and socio-emotional adjustment through teacher and peer relationships in a sample of Mexican-origin adolescents ($N=674$, $M_{age}=14.27$), when controlling for acculturation, English, family income, and gender. The results of our study indicate that perceptions of discrimination significantly and negatively predicted the quality of relationships with teachers ($\beta=-0.343$, $p<0.009$), and peers ($\beta=-0.208$, $p<0.004$). Teacher-child relationships, however, did not significantly predict academic performance. Interestingly, acculturation had a negative and significant relationship with all study variables, indicating that as acculturation increased, the quality of teacher and peer relationships, academic outcomes, and socio-emotional adjustment decreased, suggesting possible individual-, cultural-, school, or community-level protective factors. Perceptions of discrimination both directly ($c'=-0.277$, $p<0.00$) and indirectly affected socio-emotional adjustment through teacher relationships ($a_1 b_1=-0.025$, $c=-.31$), and peer relationships ($a_2 b_2=-0.034$). Our model explained 15% of variation in socioemotional adjustment and 5% variation in academic outcomes for Mexican-origin adolescents.

Keywords: Hispanic, Mexican, Discrimination, Academic, Socioemotional, Development, Adolescent, Teacher, Peer, Relationships, School

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Introduction

The current study tests hypotheses guided by Bronfenbrenner's bioecological theory of proximal processes which hypothesizes that variation in developmental outcomes is jointly shaped by characteristics of the developing person and the learning environment (Bronfenbrenner & Ceci, 1993, p. 317). Traditionally, public schools represent the primary learning environment for school-aged youth in the U.S. As children approach adolescence, there is a tendency to prioritize relationships with peers and adults beyond the family unit. So at this developmental stage, school contexts exerts greater influence on key developmental outcomes of interest than parent and family relationships (Somerville, et al., 2019; Telzer, et al., 2017). Positive relationships with teachers and peers provide youth the social support needed to adjust to the many challenges of adolescence. However, establishing these social supports can be dampened by hostile school environments, especially for racially or ethnically diverse students (Ortega-Williams, et al., 2022). This study investigates the degree to which perceptions of discrimination influence academic and socioemotional outcomes both directly and indirectly through teacher and peer relationships. As described in Figure 1, study hypotheses predict:

H_1 : Perceptions of discrimination will negatively influence academic and socioemotional outcomes directly;

H_2 : Perceptions of discrimination will negatively influence teacher and peer relationships directly;

H_3 : Relationships with teachers and peers will mediate the relationship between perceptions of discrimination and developmental outcomes of interest;

H_4 : Perceptions of discrimination will exert greater influence on peer relationships compared to teacher relationships.

The independent variable (perceptions of discrimination) is modeled as directly influencing important adolescent outcomes (i.e., academic performance and socioemotional adjustment) directly (path c) as well as indirectly through child-teacher attachment (a_1b_1) and peer relationships (a_2b_2). All study hypotheses will be tested with Hayes' PROCESS macro for SPSS (2017).

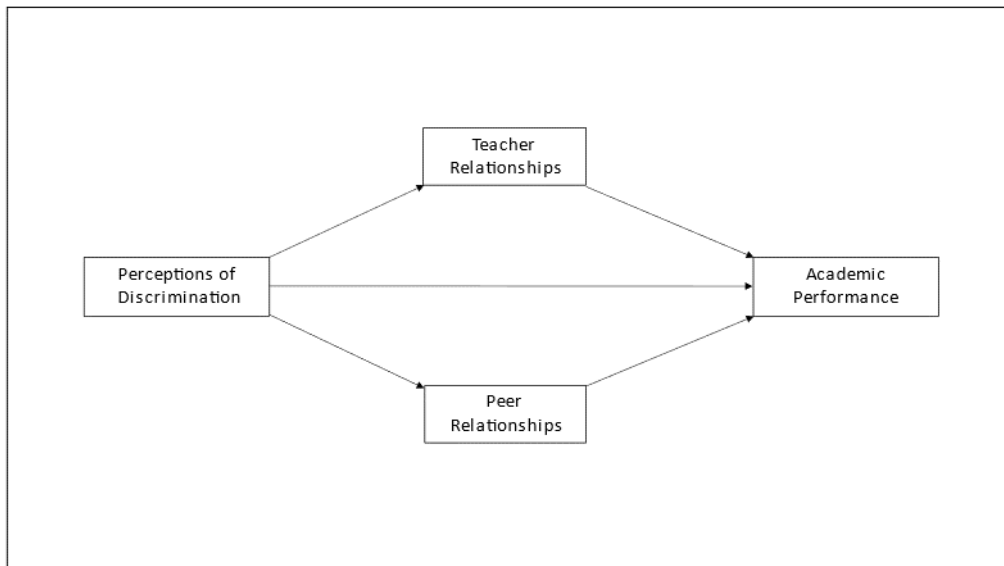


Figure 1: Conceptual Model.

Methods

Participants and Procedures

The participant sample data for this cross-sectional study are taken from Wave 5 of the California Families Project (CFP), an on-going longitudinal study on 674 Mexican-origin youth and their families living in Northern California, conducted by researchers from the University of California-Davis. CFP was designed to examine the health, development and well-being of Mexican-origin youth, as well as to identify unique cultural values, beliefs, and traditions influencing development. Data collection began in 2006 when the youth were 10 years old and conducted annually thereafter, with additional assessments at age 21 and 23.

Participants were randomly selected from the Woodland and Sacramento, California school rosters from the 2006-2007 and 2007-2008 school years. Participants were recruited by telephone or in-person if no phone number was listed. 674 Mexican-origin adolescents and their families agreed to participate in the study and parents were compensated \$100 and focal child \$50 for Wave 5. Eligible families were of Mexican-origin, living with the biological mother and if living in a two-parent household, the father had to be the biological father. Single parents were allowed to participate if no other adult was living in the household. 72.6% of the eligible families agreed to participate. Wave 5 interviews were conducted in 2010 when participants were 14-15 years old. Interviewers were bilingual and most were of Mexican heritage. Due to the length of the interviews (4-6 hours) full assessments were conducted in 2 visits, and family members were interviewed separately to protect privacy. Data was downloaded from interviewer laptops to the server at UC-Davis.

Measures

Perceived discrimination

Perceived discrimination was measured using the Adolescents Perception of Discrimination Scale, a scale developed from two separate measurement scales: Hughes and Dodge's Racism in the Workplace Scale, and Klonoff and Landrine's Schedule of Sexist Events (validated by

Johnston & Delgado, 2004). The 19-item scale consists of two sub-scales: Perceptions of general racism and personal experiences with prejudice and discrimination. Each sub-scale has four domains designed to assess adolescents' perceptions of prejudice and discrimination directed at them by specific perpetrators: teachers, peers at school, neighbors and strangers. The current study will only be examining the domains related to the school context. Participants were asked to assess the truthfulness of statements like "Your teachers think all (Mexicans/Mexican/Americans) are alike" and "If you get bad grades it is blamed on your family not valuing education." Response categories include 1=Not at all true to 4=Very true. When necessary, items were reverse-coded so that higher values indicate elevated perceptions of discrimination. The measure obtained a Cronbach's alpha of .716 with the current sample of Mexican-origin adolescent participants.

Child-Teacher Attachment

The Child-Teacher Attachment Scale was used to assess the degree to which students experienced attachment (positive bonds) with teachers. The 9-items were scored on a 4-point Likert scale adapted from the original 25-item parent and peer attachment scale developed by Armsden and Greenberg (1987) ranging from (1) never true to (4) Always true. Items included statements like: "You trusted a teacher. You could count on a teacher when you needed to talk." The measure obtained a Cronbach's alpha of .927 with adolescents in the current study.

Peer relationships

Socioemotional adjustment. The Weinberger Adjustment Inventory was used to assess adolescent socioemotional adjustment. This scale consists of 23 items comprised of 4 scales, however, only 2 scales will be included: impulse control (seven items) and consideration of others (seven items). This measure asks respondents to match their behavior (1=False to 5=True) to a series of statements like "Before you do something, you think about how it will affect the people around you" and "You become wild and crazy and do things other people might not like." The Cronbach's alpha for this wave 5 sample was 0.783.

Control variables

Control variables included in the current study are acculturation, English fluency, family income, and gender.

Results

We first conducted a bivariate correlation analysis to measure the associations between all study variables (see Table 1 for means, standard deviations, and correlations for all variables in the model). Results indicated moderate correlations between child-teacher attachment and peer relationships ($r = 0.361, p \leq 0.001$) Child teacher attachment was positively correlated to a lesser degree with socioemotional adjustment ($r = 0.267, p \leq 0.001$) and academic performance ($r = 0.177, p \leq 0.001$). Perceptions of discrimination were negatively correlated with child-teacher attachment ($r = -0.149, p \leq 0.001$), peer relationships ($r = -0.171, p \leq 0.001$), socioemotional adjustment ($r = -0.196, p \leq 0.001$), acculturation ($r = .102, p \leq 0.012$), and English fluency ($r = -0.142, p \leq 0.001$). Adolescents' English fluency was positively correlated with peer relationships ($r = 0.184, p \leq 0.001$), family income ($r = 0.183, p \leq 0.001$), socioemotional

adjustment ($r = 0.09, p \leq 0.027$), and academic performance ($r = 0.097, p \leq 0.018$). Other variables correlated with academic performance include socioemotional adjustment ($r = 0.248, p \leq 0.001$), peer relationships ($r = 0.206, p \leq 0.001$), gender ($r = -0.127, p \leq 0.002$), and family income ($r = 0.101, p \leq 0.017$). Gender was negatively correlated with socioemotional adjustment ($r = -0.117, p \leq 0.004$) and peer relationships ($r = -0.152, p \leq 0.001$). Though conservative, the correlations among all study variables confirmed the justification for further analyses.

	M(SD)	1	2	3	4	5	6	7	8	9
1 Perceptions of Discrimination	1.319(.24)	1								
2 Child-Teacher Attachment	2.484(.797)	-.149**	1							
3 Peer Relationships	3.227(.449)	-.171**	.361**	1						
4 Socioemotional Adjustment	3.567(.556)	-.196**	.262**	.270**	1					
5 Academic Performance	3.876(.903)	-.065	.177**	.206**	.248**	1				
6 Acculturation	2.001(.242)	.102*	-.323**	-.257**	-.331**	-.076	1			
7 English Fluency	3.720(.399)	-.142**	.032	.184**	.090*	.097*	.038	1		
8 Family Income	7.263(4.433)	-.034	.064	.064	.025	.101*	-.026	.183**	1	
9 Gender	.5(.5)	.047	-.072	-.152**	-.117**	-.127	-.007	-.036	.038	1

Table 1: Descriptive statistics and correlations among study variables.

We tested the hypothesized model with the PROCESS macro (version 4.1) for SPSS (version 29) using parallel mediation analysis (model 4) to assess the direct and indirect influence of perceptions of discrimination on academic performance and socioemotional adjustment, when controlling for acculturation, English fluency, family income, and gender. Process Macro allows for simultaneous analysis of both the direct and indirect effects of perceptions of discrimination on adolescent developmental outcomes through multiple mediators (M_1, M_2, M_3, \dots), in an integrated model that allows for formal comparison of the indirect effects of perceptions of discrimination through each pathway, which will determine which effect is stronger (Hayes, 2017).

As pictured in Figure 2, parallel mediation analysis demonstrated that perceptions of discrimination had both direct ($\beta = -0.277, p \leq 0.002$) and indirect negative effects on socioemotional adjustment through child-teacher attachment ($\beta = -0.025, [-0.064, -0.005]$) and peer relationships ($\beta = -0.034, [-0.077, -0.005]$) when controlling for acculturation, English fluency, family income, and gender. Results indicate that perceptions of discrimination exert more influence on socioemotional adjustment directly, than they do indirectly through teacher and peer relationships. Teacher and peer relationships partially mediated the effects of discrimination on socioemotional adjustment. The current study model explained 15% of variation in socioemotional adjustment.

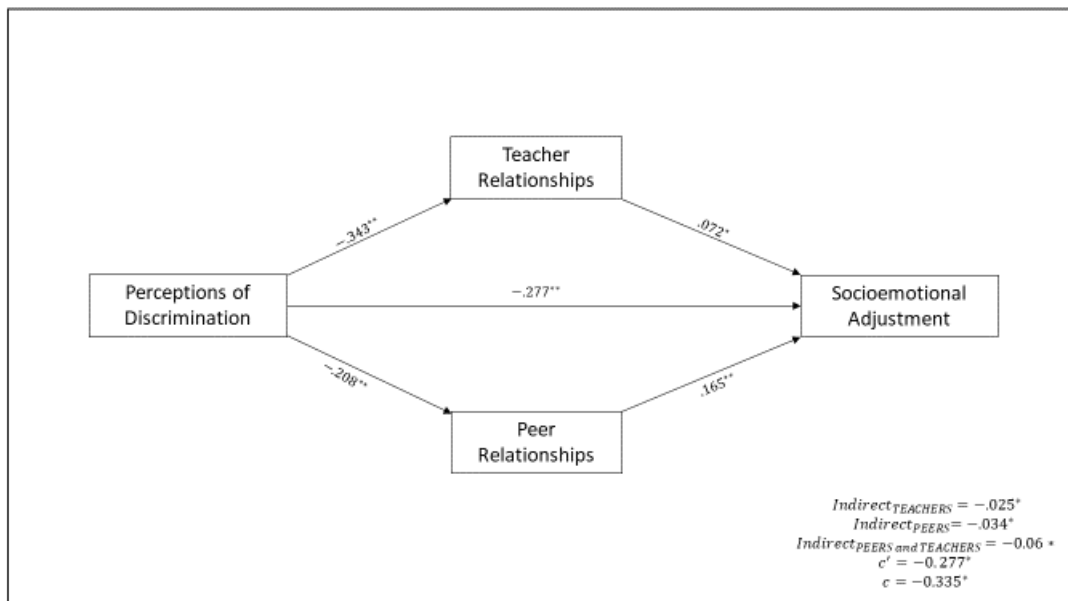


Figure 2: Direct and indirect effects of discrimination on socioemotional adjustment.

Although not a primary variable of the study, the most significant predictor of socioemotional adjustment was acculturation ($\beta = -0.576$, $[-0.760, -0.391]$). This scale was measured by Knight et al., to fill the gaps of currently available measures of acculturation with American values. This 50-item scale asks adolescents to match their agreement with statements relating to cultural beliefs like “Children should be taught that it is their duty to care for their parents when their parents get old” and “People should learn to take care of themselves and not depend on others.” Items related to Mexican cultural values were reverse-coded so that higher values indicated higher levels of acculturation.

Gender also significantly and negatively influenced socioemotional adjustment ($\beta = -0.11$, $[-0.195, -0.025]$). Among the study sample, greater perceptions of discrimination were associated with greater deficits in socioemotional adjustment for females but not males. Perceptions of discrimination also had a significant indirect effect on socioemotional adjustment through its dual impact on child-teacher attachment ($\beta = -0.025$, $[-0.064, -0.001]$) and peer relationships ($\beta = -0.034$, $[-0.077, -0.005]$), so that greater discrimination predicted poorer quality relationships with teachers and peers. The total effect of perceptions of discrimination on socioemotional adjustment *both* directly *and* indirectly via child-teacher attachment *and* peer relationships was negative and significant ($\beta = -0.335$, $[-0.514, -0.157]$). For Mexican-origin adolescents, perceptions of discrimination accounted for 15% of variation in socioemotional adjustment ($p < 0.000$), when controlling for acculturation, English fluency, family income, and gender.

As described in Figure 3, perceptions of discrimination also negatively influenced academic performance, but only indirectly through peer relationships ($\beta = -0.046$, $[-0.1169, -0.004]$) and to a lesser degree than socioemotional adjustment ($\beta = -0.034$, $[-0.077, -0.005]$). These findings indicate that although perceptions of discrimination negatively influence student-teacher relationships to a greater degree than peer relationships, peer relationships exert greater influence on adolescent outcomes than student-teacher relationships. For Mexican-origin adolescents, perceptions of discrimination accounted for 4% of variation in academic performance ($p < 0.001$).

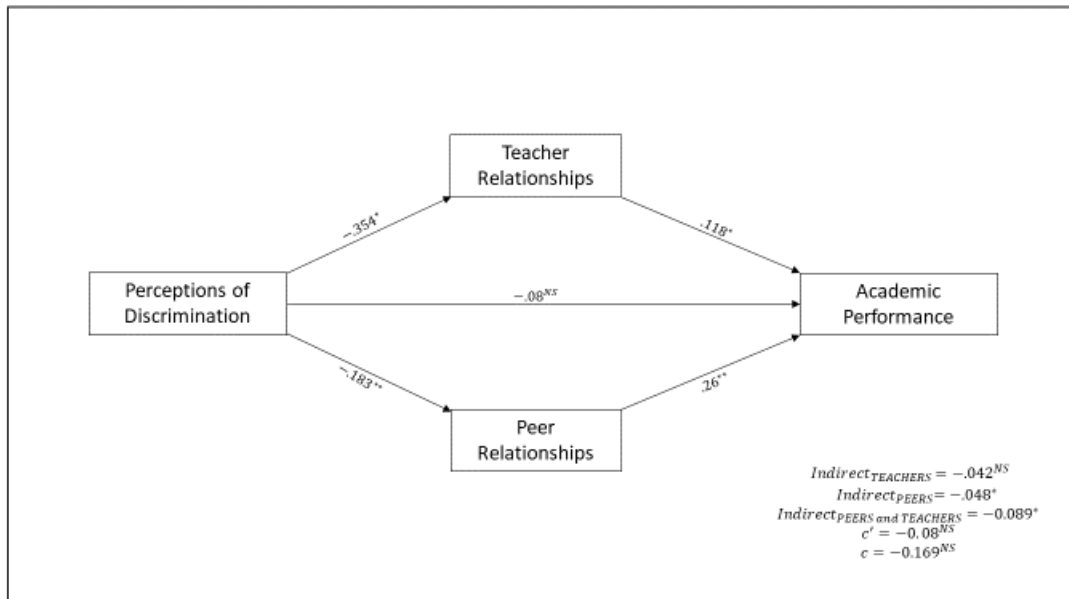


Figure 3: Direct and indirect effects of discrimination on academic performance.

The strongest predictor of negative school relationships was again, acculturation with American values. Acculturation was three times as influential as discrimination in predicting child-teacher attachment ($\beta = -0.997, p \leq 0.000$), and twice as influential on peer relationships ($\beta = -0.426, p \leq 0.000$). So, greater levels of acculturation directly predicted poorer quality relationships with teachers and peers, which significantly predicted lower socioemotional adjustment.

However, the sample participants lived in Northern California, a state with a Hispanic majority population. It would seem that for Mexican-origin youth living in a Hispanic majority population, acculturation represents a developmental risk. This finding provides further evidence for what is referred to by social scientists as the immigrant paradox (Coll & Marks, 2012), a counterintuitive phenomenon in which newly arrived immigrant youth (first-generation) experience higher socioemotional adjustment and functional outcomes than more integrated Mexican-origin youth (second- and third-generation). Extensions of the current study will employ multiple group longitudinal analysis to examine variation between first- and second-generation youth from early to late adolescence. Further examination extent to which acculturation influences other key developmental outcomes of interest (i.e. educational aspirations and attainment, risk-taking behavior, etc.) with longitudinal panel models be worthwhile to examine the bidirectional influence of acculturation and discrimination over time. It would also allow for within-group comparisons of native- and foreign-born Mexican-origin youth.

Discussion and Conclusion

Current study results suggest that perceptions of discrimination have significant impacts on the socioemotional adjustment and academic performance of Mexican-origin adolescents *both* directly and indirectly through teacher and peer relationships. When adolescents perceive greater discrimination in school, they experience less social support from teachers and peers which negatively influences socioemotional adjustment and academic performance to a lesser degree. Students with greater perceptions of discrimination had poorer school relationships, academic performance, and socioemotional adjustment.

As predicted, the negative indirect effects were more influential when operating through peer relationships than through teacher relationships despite the stronger influence of discrimination on teacher-student relationships. One possible explanation might be the increased importance of peer approval and social acceptance that drives adolescents at this developmental stage. This confirms previous research identifying the hypersensitivity adolescents have towards the negative consequences of social exclusion (Blakemore & Mills, 2014).

Adolescents who experienced perceptions of discrimination performed more poorly academically and suffered more socioemotional adjustment challenges. These findings can inform future diversity, equity, and inclusion school initiatives. While study results confirm the positive influence of teacher and peer relationships on developmental outcomes, the parallel analytical method allowed for close comparison of the mediated effects, which revealed a stronger negative association between discrimination and adolescent outcomes when operating through peer relationships. Overall, study results confirmed the hypotheses that perceptions of discrimination negatively predict school relationships and Mexican-origin adolescent outcomes.

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