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Discrimination and Acculturation Stress: A Longitudinal Study of Children's Well-Being from Prenatal Development to 5 Years of Age

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Abstract

Objective—To examine whether cumulative family discrimination and acculturation stress (prenatally to 24-months postpartum) among Mexican-origin adolescent mothers and their mother-figures predicted children's socio-emotional functioning and academic achievement at 5 years of age, and the role of maternal depressive symptoms and mother-child interactions in the association.

Methods—Mexican-origin families ($N = 204$) with an adolescent mother, a child, and a mother-figure participated in a 6-wave longitudinal study (2007 to 2013). Families were recruited and interviewed during the adolescent mothers' pregnancy; adolescent mothers, mother-figures, and children were then assessed annually for the next 5 years using a combination of interview-based survey and observational methods. Maternal reports of children's socio-emotional behaviors (measured using the Child Behavior Checklist) and children's academic achievement (assessed with the Woodcock Johnson III Tests of Achievement/Bateria III Woodcock-Muñoz) were used.

Results—Structural equation modeling revealed that greater cumulative family discrimination and acculturation stress from pregnancy to 24-months postpartum predicted higher adolescent mothers' depressive symptoms, greater mother-child intrusive interactions, and less mother sensitivity at 36-months postpartum. Maternal depressive symptoms were positively related to children's CBCL symptoms at 60-months postpartum. Greater cumulative discrimination and acculturation stressors directly predicted children's lower Woodcock Johnson/Bateria test scores, after accounting for socio-economic status.

Conclusions—Mexican-origin adolescent mothers' and mother figures' cumulative discrimination and acculturation stress from pregnancy through children's second birthday

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predicted children's socio-emotional and academic achievement at age 5. Overall, the findings underscore the cumulative impact of these stressors on well-being in a population with substantial public health significance.

Keywords

Discrimination; Acculturation; Adolescent mothers; Latinos; Children's development

Ethnic and racial disparities in children's well-being are persistent problems in the U.S.¹ Research increasingly supports the notion that these disparities are not driven by individual biological processes, but by social and environmental factors such as low socioeconomic status and/or ethnic-racial minority status.^{2,3} The American Academy of Pediatrics' (AAP) recent policy statement recommended that research focused on understanding the social and environmental factors related to disparities in children's well-being be prioritized.³ These social and environmental factors include two relevant *stressors* facing ethnic-racial minority families in the U.S.: racial-ethnic discrimination and acculturation stress.⁴⁻⁹ Discrimination refers to mistreatment based on an individual's race or ethnicity (e.g., being called a racial-ethnic insult, receiving poor service at a store because of race/ethnicity); acculturation stress refers to stress associated with adapting to different cultures (e.g., learning and communicating in English; adapting to new cultural norms). Whereas research documents substantial costs associated with discrimination and acculturation stress for individuals' well-being⁶⁻⁹, few studies have examined how the effects of these stressors extend beyond individuals to *accumulate* within ethnic-racial minority families and, ultimately, impact children's well-being. The current study presents longitudinal data from 204 Mexican-origin families and examines how *family cumulative discrimination and acculturation stress* during prenatal development to 24-months postpartum relates to children's socio-emotional well-being and academic functioning at 5 years of age. Research suggests that exposure to stress prenatally and during the earliest years of brain plasticity and development can have an enduring impact on children's later learning and health outcomes.^{10,11} Further, capturing children's outcomes at 5 years of age corresponds with the entry to formal schooling, and children who enter kindergarten with low achievement are more likely to face long-term negative outcomes.¹² We focus on children of Mexican-origin adolescent mothers, an important population to study given that Mexican-origin females have the highest adolescent birthrates within the U.S.¹³, and that children born to adolescent mothers are at increased risk for emotional and academic problems.^{14,15}

Stressors, such as discrimination and acculturation stress, are prevalent and costly. Research suggests that 30% to 60% of ethnic-racial minority adults in the U.S. report experiences of ethnic-racial discrimination^{16,17} Additionally, U.S. Latinos experience acculturation stress^{5,8}, which can emerge during the process of adaptation to the dominant or mainstream culture, as well as the process of maintaining one's own culture. Both discrimination^{6,7} and acculturation stress^{8,9} have been linked with deleterious outcomes in adults, including poor mental and physical health. Recent research reveals that the effects of these stressors may extend *beyond* adults to their children.⁷ For instance, mothers' racial discrimination has been found to predict infant preterm and low birth weight deliveries¹⁸, children's internalizing symptoms (e.g., anxiety, depression)¹⁹, and children's cognitive abilities.²⁰ Although there

is less work examining the impact of parents' acculturation stress on child outcomes, a recent study found that Mexican and Dominican immigrant mothers' language-based acculturation stress predicted increases in children's healthcare visits for illness.⁴

The family stress model posits that stressors experienced by parents affect children via parents' poorer emotional well-being and negative parent-child interactions.²¹ This model has received widespread empirical support, but past research has primarily focused on economic and neighborhood stressors.²¹ The limited work examining acculturation stress and discrimination suggests a similar family stress process. For instance, regarding parents' emotional well-being, higher acculturation stress predicted higher levels of depressive symptoms among Mexican-origin mothers.²² Regarding parent-child interactions, mothers' higher perceived discrimination related to poorer mother-child relationship quality and less nurturing parenting behaviors among African Americans.²³ Finally, mothers' higher perceived discrimination predicted higher maternal depressive symptoms and, in turn, higher internalizing and externalizing symptoms (e.g., aggressive behaviors) among an ethnic-racial diverse sample of children.²⁴ Together, this work suggests that parents' experiences of discrimination and acculturation stress may negatively impact children by disrupting parents' emotional well-being and interactions with their children.

A noted limitation of this work is the focus on *mothers'* stressors without the consideration of *additional* family members' stressors.^{21,22} Among Mexican-origin families²⁵ and families with adolescent mothers²⁶, multigenerational households are common, and within these families, adolescents' own mothers (i.e., children's grandmothers) or other female kin, herein called "mother-figures," provide support and have significant contact with children.²⁶ Thus, in addition to adolescent mothers' stressors, mother figures' stressors may disrupt adolescent mothers' emotional well-being and interactions with their children and, in turn, children's well-being. An additional limitation of prior work is the focus on the short-term effects of stressors and/or the focus on one single stressor, while not examining multiple stressors or how stressors may *accumulate* across time to affect children.²⁷ The cumulative risk model posits that development occurs within contexts in which multiple stressors co-occur and examining exposure to multiple stressors, as compared to single stress exposure, is more informative in explaining disruptions in children's development.²⁷ In the current study, we examined *multiple* stressors (discrimination, acculturative stress) across *multiple* family members, while also addressing the *cumulative long-term* effects from pregnancy to 24-months postpartum. These cumulative experiences were linked to observations of maternal sensitivity and intrusiveness and to self-reports of adolescent mothers' depressive symptoms at 36-months postpartum and, in turn, measures of children's well-being at 60-months postpartum. We hypothesized that family cumulative acculturation stress and discrimination would be positively associated with adolescent mothers' depressive symptoms and intrusive parenting behaviors, and negatively associated with adolescent mothers' sensitive parenting behaviors. Mothers' intrusive parenting and depressive symptoms were, in turn, hypothesized to predict greater levels of children's problem behaviors and poorer academic achievement, whereas mothers' sensitive parenting was hypothesized to predict fewer problem behaviors and greater academic achievement. Our analyses controlled for family socioeconomic status, mothers' ratings of their children's negativity, child gender, child

language, co-residency of family members, and prior levels of maternal depressive symptoms and children's outcomes.

METHOD

Data came from a 6-wave longitudinal study of 204 Mexican-origin adolescent mothers, their mother-figures, and their children residing in the U.S (2007 to 2013; see Table 1 for sample demographics). Adolescent mothers were recruited during their third trimester of pregnancy from high schools, and health and community centers in a Southwestern metropolitan area (see *Author Citation* for detailed recruitment information). Criteria for participation included being of Mexican-origin and between the ages of 15 to 19 years, being unmarried, and having a mother figure who was willing to participate in the study. Participants who were 18 years or older provided informed consent, and parental consent and youth assent were obtained for those under 18. At Wave 1 (W1), adolescent mothers and mother-figures participated in individual, in-home, semi-structured interviews; then, adolescent mothers, their mother-figures, and their children were assessed annually for the next 5 years (W2 to W6) at 10-, 24-, 36-, 48-, and 60-months postpartum, respectively. Adolescent mothers and mother-figures each received \$25, \$30, \$35, \$40, \$50, and \$60 for their participation across the 6 waves. Family retention rates in the study were 96% at 10 months postpartum, and 88% at all subsequent waves^a. Participants were interviewed in their language of choice (i.e., English or Spanish). Children participated in in-home structured assessment tasks and observed parent-child interactions during each home visit (W2 – W6). Adolescent mothers designated the language preference for their child. All measures were translated into Spanish using the forward and back-translation method with decentering.²⁸ The Institutional Review Board of [Blinded for Review] approved all study procedures.

Study Measures

Cumulative Discrimination and Acculturation Stress—We assessed adolescent mothers' and their mother-figures' experiences of *discrimination* at W1, W2, and W3 using an adapted version of the Perceived Discrimination Scale²⁹; adolescent mothers responded to 10 items and mother-figures responded to 8 items^b (e.g., How often has someone yelled racial slurs or racial insults at you?) using a 4-point Likert scale (1 = *almost never* to 4 = *very often*). A mean score across items was calculated, with higher values representing greater perceived discrimination (adolescent mothers' $\alpha_{W1-W3} = .80, .89, .91$; mother-figures' $\alpha_{W1-W3} = .84, .79, .82$). *Acculturation stress* was assessed using an adapted 23-item version of the Multidimensional Acculturative Stress Inventory^c.³⁰ Adolescent mothers and mother-figures responded to items (e.g., It bothers me when I speak English with an accent) using a 6-point Likert scale (0 = *did not happen* to 5 = *extremely stressful*). A mean score across items was used, with higher values representing greater acculturation stress

^aAcross the predictor variables of interest in the current study, the percentage of individuals missing data on specific variables ranged from 8% to 33%. We examined differences between families (adolescent mothers and mother-figures) who participated at all waves and families who did not participate at all waves. Families did not differ on W1 family income, adolescent nativity, mother-figure nativity, W1 acculturation stress, and W1 discrimination.

^bMother-figures were not asked two items from the original scale that assessed discrimination in the school setting.

^cWe deleted two items from the original scale because they contained the word "discriminated" and overlapped with discrimination items.

(adolescent mothers' $\alpha_{W1-W3} = .88, .88, .87$; mother-figures' $\alpha_{W1-W3} = .88, .84, .89$). To calculate a family cumulative stressor score, adolescent mothers' and their mother-figures' scores on discrimination and acculturation stress at each time point (pregnancy, 10 months, and 24 months) were first dichotomized (0/1) based on a 70th percentile score (0 = at or below the 70 percentile; 1 = above the 70th percentile), consistent with prior work.^{31,32} Using these scores, a family cumulative stressor score was computed by summing across all 12 indicators of stress (i.e., 6 for adolescent mothers, 6 for mother-figures). The mean family cumulative stressor score was 3.40 ($SD = 2.56$; Range = 0 – 10).

Maternal Depressive Symptoms—Adolescent mothers' *depressive symptoms* were assessed using the 20-item Center for Epidemiological Studies Depression Scale³³ at W1 and W4 (pregnancy, 36-months postpartum). Items (e.g., “I had crying spells”) were scored on a 4-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*mostly or almost all the time*). Higher values reflected a greater frequency of depressive symptoms ($\alpha_{W1} = .88$; $\alpha_{W4} = .90$).

Mother-Child Interactions—We assessed mother-child interactions during observational tasks at W4; adolescent mothers and their children were videotaped during 5 minutes of free-play. Bilingual observational coders scored the free-play session using a well-established coding paradigm for capturing the intensity and duration of maternal sensitivity and intrusiveness during the session.^{34,35} Sensitivity reflected the degree to which mothers were aware of the child's needs, moods, interest, and capabilities (1 = *no sensitive behaviors observed*, 2 = *minimally sensitive* (i.e., one, brief instance of sensitivity observed), 3 = *moderately sensitive* (i.e., more than one instance, or one prolonged or intense instance), 4 = *mostly sensitive* (i.e., interaction was marked with more sensitive maternal behaviors than not), 5 = *highly sensitive* (i.e., mother consistently engages in sensitive behaviors). Intrusiveness captured behaviors in which the mother acted in an intrusive manner (e.g., persisted in demonstrating toys to the child long after the child had an interest in and desire to manipulate the toys him/herself; 1 = *no intrusive behaviors observed*, 2 = *minimally intrusive* (i.e., one, brief instance of intrusive behavior, but non-insistent or non-directive quality), 3 = *inconsistently intrusive* (i.e., periods of blatant intrusiveness intermixed with periods of responsive interaction), 4 = *moderately intrusive* (i.e., the mother is more intrusive than not throughout the interaction), 5 = *highly intrusive* (i.e., mother is extremely intrusive or over-controlling). These coding schemes have been used and validated in previous studies.^{34, 36–38} Coders were trained until they reached a level of inter-rater reliability $> .75$. A total of 15% of videos were coded by two independent coders to assess drift reliability, and the coders met to discuss and resolve disagreements. Inter-rater reliability was .73 for sensitivity, and .62 for intrusiveness.

Children's Socio-Emotional Outcome—We examined children's socio-emotional outcomes at W4 and W6 (36-months and 60-months postpartum) using the 99-item Child Behavior Checklist (CBCL).³⁹ The CBCL includes items (e.g., “Doesn't get along with other children”) that assess children's internalizing and externalizing behavioral symptoms ($\alpha_{W4} = .96$; $\alpha_{W6} = .97$), and response options range from 0 (*not true at all*) to 2 (*very true or*

often true). Item scores were summed with higher scores reflecting higher problem behaviors.

Children's Academic Achievement—The Woodcock Johnson III Tests of Achievement (WJ-III)⁴⁰ was used to assess *academic achievement* for English-speaking children (56% of children at W4, 69.8% at W6); the Bateria III Woodcock-Muñoz (Bateria-III)⁴¹ was used to assess Spanish-speaking children. Based on previous research examining academic readiness and achievement^{42–43}, we examined children's scores on two subtests, Letter/Word and Applied Problems, and utilized the standard scores. The two scores were averaged to create a composite achievement score at W4 and W6.

Covariates—Given that child temperament relates to parent-child interactions⁴⁴, we included children's negative affectivity as a covariate on mother-child intrusive interactions and sensitivity. This was assessed using the Child Behavior Questionnaire Very Short Form⁴⁵ (12 items) at 36-months postpartum ($\alpha = .68$). Adolescent mothers indicated whether items (e.g., “Gets quite frustrated when prevented from doing something s/he wants to do”) were “true” or “false” of the child's typical behavior in the last 6 months. Responses ranged from 1 (*extremely false*) to 7 (*extremely true*). To account for family socio-economic status, W1 *Family income* was included as a covariate and assessed using self-reports of mother-figures' annual income, funds received from other household members (e.g., adolescent mother), and public assistance. We also controlled for *co-residency*—whether adolescent mothers and mother-figures lived together at W1, W2, and W3—by aggregating the number of waves lived together ($M = 2.18$, $SD = .93$; Range = 0 – 3). Adolescent mothers' *education* at W6 and child gender were included as covariates on children's W6 WJ-III/Bateria III achievement scores.

RESULTS

To examine the relations between cumulative family discrimination and acculturation stress and children's outcomes, we used structural equation modeling in Mplus 7.2.⁴⁶ Based on existing guidelines⁴⁷, adequate model fit was determined by examining the Comparative Fit Index (CFI; greater than .90), Root Mean Square Error of Approximation (RMSEA; less than .08), and Standardized Root Mean Residual (SRMR; less than .08). Missing data were estimated using full information maximum likelihood.⁴⁸

Model fit indices indicated adequate fit (Figure 1). As hypothesized, greater family cumulative stressors from pregnancy to 24-months postpartum related to greater intrusive behaviors (95% CI, .05 to .39, $p < .05$) and less maternal sensitivity (95% CI, $-.44$ to $-.08$, $p < .01$) by adolescent mothers when interacting with their children at 36 months postpartum (W4), accounting for W4 mothers' perceptions of children's negativity, W1 family income, W1 to W3 co-residency, and child gender. Greater family cumulative stressors were also related to greater depressive symptoms among adolescent mothers at 36-months postpartum (95% CI, .04 to .34, $p < .05$), accounting for W1 depressive symptoms, W1 family income, W1 to W3 co-residency, and child gender. Adolescent mothers' depressive symptoms at 36 months were then related to greater child CBCL symptoms at 60-months postpartum (95% CI, .01 to .29, $p < .05$), accounting for children's CBCL symptoms at 36 months, W1 family

income, and child gender. Mothers' intrusive interactions and sensitivity at 36 months were not related to children's outcomes at 60-months; however, greater cumulative family stressors were directly related to poorer academic achievement (95% CI, $-.43$ to $-.08$, $p < .01$) at 60-months postpartum, accounting for W1 family income, W4 children's academic achievement, child gender, W6 children's language, and W6 adolescent mother education.^d A formal test for mediation using RMediation⁴⁹ revealed no significant mediational processes in the model.

DISCUSSION

It is critical to examine the ways in which discrimination and acculturation stressors contribute to empirically documented ethnic-racial disparities in child well-being.^{1–3} Although very young children are not likely to directly recognize these stressors⁵⁰, these experiences are salient in the lives of their parents and caregivers, and may help to explain children's well-being because these stressors disrupt mothers' mental health and interactions with their child.^{23,24} As a population, children of adolescent mothers are at risk for experiencing disparities in child well-being^{14,15}; thus, the current study focused on Mexican-origin adolescent mothers and children, and examined whether discrimination and acculturation stressors experienced by caregivers early in the child's life (prenatally to 24-months postpartum) predicted maternal depressive symptoms and mother-child interactions at 36 months postpartum and, in turn, children's well-being at 60-months postpartum. We focused on cumulative *family* stressors (those experienced across time by the adolescent mother and her mother-figure) because the prevalence of multigenerational caregiving is high in this population^{25,26}, and stressors have been shown to accumulate within family systems and across time to negatively influence child well-being.²⁷ We found that greater family acculturation and discrimination stressors experienced prenatally to 24-months postpartum related to increases in maternal depressive symptoms at 36-months, which were related to greater CBCL symptoms in children at 60 months. Family cumulative stressors directly related to decreases in academic achievement, and this was not explained by mothers' depressive symptoms or mother-child interactions.

For children's socio-emotional well-being, our findings are generally in line with the family stress model.²¹ They extend prior work, however, by being one of the first empirical studies to document that cumulative discrimination and acculturation stress, specifically, experienced by multiple caregivers *during the child's prenatal and early development*, can influence maternal functioning, which can influence children's socio-emotional functioning nearly 5 years after birth. These negative effects on children's socio-emotional functioning were evident after taking into account adolescent mothers' prenatal depressive symptoms, and prior levels of children's socio-emotional well-being. Further, we accounted for family income, suggesting that cumulative discrimination and acculturation stressors may impact

^dTwo additional models were examined in which cumulative discrimination and cumulative acculturation stress were examined as individual stressors and tested in two separate models. Results revealed that cumulative discrimination was a significant predictor of W4 mother-child intrusive interactions and W4 mother-child sensitivity, and a marginally significant predictor of W4 adolescent mother depressive symptoms. Cumulative acculturation stress significantly predicted W4 mother-child sensitivity and W4 adolescent mother depressive symptoms, but was a marginally significant predictor of mother-child intrusive interactions. In both models, stressors (acculturation stress and discrimination) were directly related to children's academic achievement.

children, *above and beyond* the negative effects of limited economic resources. Accordingly, to support the well-being of ethnic-racial minority children, health professionals, educators, and researchers must work together to identify mothers who are at risk for experiencing discrimination and acculturation stress, be aware that such stressors are costly to maternal and children's well-being, and develop programs that combat discrimination and acculturation stress. Such programs may include training of professionals to be more inclusionary and sensitive (e.g., culturally competent care, cultural sensitivity training in schools and communities), but also the development of interventions for Mexican-origin mothers designed to reduce prejudice and acculturation stressors and increase resources and coping strategies. Programs may also include linking ethnic-racial minority mothers to healthcare services capable of improving their emotional functioning and reducing their depressive symptomatology.

Cumulative family discrimination and acculturation stressors significantly predicted children's academic functioning at 5 years, but not via mothers' depressive symptoms and mother-child interactions. Though these findings were not in-line with the family stress model, they highlight both the long-term costs associated with cumulative discrimination and acculturation stressors to child well-being, and identify areas for future research. For example, stressors may negatively impact children's academic functioning by limiting parental investments²¹; children may be negatively influenced by caregivers' experiences of discrimination and acculturation stress because these stressors may limit caregivers' ability to provide key investment, such as language stimulation, learning materials, and educational experiences outside the home.²¹ Though these hypotheses have not yet been tested directly vis-à-vis discrimination/acculturation stressors, the current pattern of findings suggests this is an important direction for future research. Note that the impact of stressors on children's academic functioning emerged after accounting for family income, suggesting that discrimination and acculturation stress may limit maternal investments over and above families' economic resources. Given that experiences of discrimination and acculturation stress are evident in caregivers' lives, clinical and community providers should work to ensure that investments in ethnic-racial minority children's well-being are made.

In sum, our findings suggest that family cumulative discrimination and acculturation stress relate to mothers' emotional functioning, and children's socio-emotional and academic well-being over time. We utilized longitudinal data across 6 years and examined multiple family members' experiences to account for the broader family context of these stressors. Further, we used multiple informants and multiple modes of assessment (i.e., survey data, observational tasks, standardized tests). Our findings underscore the relevance of discrimination and acculturation stress for Mexican-origin children and family members' well-being.

Despite its strengths, the current study has limitations to acknowledge. First, we examined Mexican-origin families with an adolescent mother. Although this population is relevant from a public health perspective, future studies should examine the generalizability of our findings to a broader sample of Mexican-origin adult parents and children, and consider the role of other family members' experiences of discrimination and acculturation stressors (e.g., fathers' stress). Second, our study was grounded in the cumulative risk model; these

models provide a holistic examination of multiple risk factors, and have demonstrated utility for explaining disruptions in children's development have been noted.²⁷ However, they may also mask nuanced information about stressor specificity (e.g., whether one stressor is more strongly related to an outcome versus another stressor) and developmental specificity (e.g., whether a stressor at a particular time is more impactful than at another time). Related, we relied upon a relatively limited assessment of stressors—we did not assess discrimination and acculturation stress based on documentation or citizenship status in the U.S. Nor did we assess how these stressors may vary by generational status, years in the U.S., or more specific indices of acculturation (values, behaviors, beliefs). Future studies with a broader conceptualization of stressors and multiple assessment strategies are needed to uncover the complexities and nuances of acculturation factors and stressors in ethnic-racial minority families in the U.S. Finally, there were two additional methodological limitations in our analyses. First, the reliability for intrusive interactions was low. This may be because mothers tended to score relatively low on intrusiveness, skewing the behavior to the low end of the scale with fewer opportunities for coders to demonstrate reliability at the high end. This skewness may relate to lower reliability.⁵¹ Second, we relied on maternal-report of children's socio-emotional behaviors (CBCL symptoms), which could be biased based on mothers' own feelings of depression.^{52,53} Replication studies focused on observational techniques that include intrusiveness and multiple informants of mother-child interactions and children's socio-emotional behaviors are needed. Despite these limitations, our study suggests that discrimination and acculturation stressors come at significant costs for Mexican-origin children with an adolescent mother. Future research is needed to fully illuminate the processes by which these stressors impact other ethnic-racial minority families in the U.S.

Conclusion

In line with the AAP's policy statement regarding disparities in ethnic-racial minority children's well-being³, this longitudinal study found that Mexican-origin family members' cumulative experiences of discrimination and acculturation stress from pregnancy through children's second birthday predicted children's socio-emotional and academic well-being at 5 years of age. Some of these deleterious effects can be explained by disruptions to maternal emotional functioning, but future investigations need to explore additional explanatory mechanisms. Overall, the findings underscore the negative impact of discrimination and acculturation stress on well-being in a population with substantial public health significance.

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Figure 1.

Pathways linking family cumulative discrimination and acculturation stressors to children's academic achievement and socio-emotional well-being via mothers' functioning and mother-child interactions ($N = 204$). Model fit: CFI = .903, RMSEA = .054, SRMR = .046. W1 = Wave 1; W3 = Wave 3; W4 = Wave 4; W6 = Wave 6. WJ = Woodcock Johnson; CBCL = Children's Behavior Checklist. Family income and child gender was included as a control on W4 mediators (i.e., intrusive interactions, sensitivity during interactions and adolescent mother depressive symptoms), and W6 child outcomes (i.e., academic achievement and socio-emotional well-being). Family co-residence status was included as a control on W4 mediators. W6 child language and W6 adolescent mother education was included as controls on W6 academic achievement. Gray boxes represent additional covariates in the model. Standardized coefficients presented. R^2 represents the amount of variance explained in the endogenous variable. $^\dagger p = .05$, $* p < .05$, $** p < .01$, $*** p < .001$.

Table 1Sample Characteristics for Mexican-Origin Adolescent Mothers and Mother-Figures (*N* = 204 families)

	% (<i>n</i>)	Mean (SD)	Range
Adolescent mothers foreign-born	35.8% (73)		
Mother-figures foreign-born	69.6% (142)		
Adolescent mothers interviewed in Spanish W1	38.7% (79)		
Mother-figures interviewed in Spanish W1	69.1% (141)		
Adolescent mothers who were first time mothers	93.6% (191)		
Adolescent mother/mother-figure co-residency W1	86.8% (177)		
Adolescent mother/bio father co-residency W1	22.5% (46)		
Bio father Hispanic/Latino ethnicity	94.1% (192)		
Adolescent mother generational status ^a		1.87 (2.39)	.00 – 7.00
Adolescent mother years in the U.S. at W1		12.82 (5.14)	.00 – 19.00
Mother-figures years in the U.S. at W1		23.28 (14.81)	.00 – 66.00
Adolescent weeks of pregnancy W1		30.86 (4.52)	23.00 – 40.00
Adolescent mother age at W1		16.80 (1.00)	15.02 – 19.00
Mother-figure age at W1		41.15 (7.01)	21.92 – 78.00
Family income W1		\$27,323 (\$19,893)	\$94 – \$114,000
Adolescent mother discrimination W1		1.34 (.37)	1.00 – 3.70
Adolescent mother discrimination W2		1.34 (.45)	1.00 – 4.00
Adolescent mother discrimination W3		1.34 (.48)	1.00 – 4.00
Mother-figure discrimination W1		1.25 (.37)	1.00 – 3.38
Mother-figure discrimination W2		1.19 (.31)	1.00 – 3.25
Mother-figure discrimination W3		1.25 (.36)	1.00 – 2.75
Adolescent mother acculturation stress W1		.65 (.56)	.00 – 4.83
Adolescent mother acculturation stress W2		.68 (.59)	.00 – 3.26
Adolescent mother acculturation stress W3		.63 (.54)	.00 – 2.61
Mother-figure acculturation stress W1		.86 (.63)	.00 – 2.96
Mother-figure acculturation stress W2		.66 (.51)	.00 – 3.57
Mother-figure acculturation stress W3		.80 (.63)	.00 – 2.83
Family cumulative stress W1-W3		3.40 (2.56)	.00 – 10.0
Mother-child intrusive interactions W4		1.74 (.71)	1.00 – 4.00
Mother-child sensitivity W4		3.37 (.84)	1.00 – 5.00
Mothers' depressive symptoms W4		.76 (.54)	0.00 – 2.90
Children's WJ scores W4		85.01 (10.35)	65.00 – 112.0
Children's WJ scores W6		90.66 (11.16)	59.5 – 122.5
Children's CBCL symptoms W4		39.17 (25.01)	.00 – 110.0
Children's CBCL symptoms W6		32.74 (24.81)	.00 – 126.0

Note. W1 = Wave 1 (postpartum); W2 = Wave 2 (10-months postpartum); W3 = Wave 3 (24-months postpartum); W4 = Wave 4 (36-months postpartum); W6 = Wave 6 (60-months postpartum). WJ = Woodcock Johnson.

^a Adolescent generational status reflects total number of immediate family members born in the U.S.; 0 indicates no one in the immediate family is U.S-born, whereas 7 indicates that the adolescent, both of her biological parents, both of her maternal grandparents, and both of her paternal grandparents were U.S. born.

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