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Differing Cognitive Trajectories of Mexican American Toddlers: The Role of Class, Nativity, and Maternal Practices

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Abstract

Recent studies reveal early and wide gaps in cognitive and oral language skills—whether gauged in English or Spanish—among Latino children relative to White peers. Yet, other work reports robust child health and social development, even among children of Mexican American immigrants raised in poor households, the so-called *immigrant advantage*. To weigh the extent to which Mexican heritage or foreign-born status contributes to early growth, we first compare levels of *cognitive and communicative skills* among children of Mexican American and native-born White mothers at 9 and 24 months of age, drawing from a national sample of births in 2001. Just one fifth of Mexican American toddlers kept pace with the cognitive growth of White toddlers at or above their mean rate of growth through 24 months of age, matched on their 9-month cognitive status. We then assess how factors from developmental-risk or ecocultural theory help to explain which Mexican American toddlers kept pace with White peers. Growth was stronger among toddlers whose family did not live beneath the poverty line, and whose mothers reported higher school attainment, more frequent

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learning activities, and exhibited steadier praise during a videotaped interaction task, factors more weakly observed among foreign-born Mexican American mothers. We found little evidence that foreign-born mothers exercised stronger home practices that advanced toddlers' early cognitive growth as posited by immigrant-advantage theory. The positive factors emphasized by developmental-risk theory helped to explain variation in the cognitive growth of children of native-born, but not foreign-born, Mexican mothers.

Keywords
cognitive growth, Mexican American children, maternal practices

The early development of Mexican American children unfolds in a paradoxical manner. Recent work details healthy prenatal practices and robust births among their mothers, even when residing in poor neighborhoods (Fuller et al., 2010; Landale, Oropesa, & Bradatan, 2006). We also now know that young Mexican American children display comparable rates of social and emotional growth when compared with Whites, and similar levels of physical health, except for higher rates of early obesity (Crosnoe, 2007; Guerrero et al., 2013). First-generation Mexican American youngsters at times display stronger indicators in these domains than later-generation peers, a pattern labeled the *immigrant advantage* or *paradox* (García Coll & Marks, 2011).

But recent work also details how cognitive and language growth of Mexican American children already lags behind White peers before entering school (Reardon & Galindo, 2009). These cognitive gaps, whether assessed in English or Spanish, are mirrored in weaker preliteracy skills, less complex (school-related) oral language, and less familiarity with print materials (Fuller et al., 2010; Guerrero et al., 2013). Certainly, more work is required to understand whether Latino children overall acquire culturally situated cognitive skills not well gauged by conventional measures (Harwood, Leyendecker, Carlson, Ascenio, & Miller, 2002; López, Correa-Chávez, Rogoff, & Gutiérrez, 2010), and how cognitive demands are situated in household activities that differ from those found in White homes (Fuligni & Pedersen, 2002). Still, the emergence of cognitive disparities hold sharp consequences for young Mexican American children, and their origins are not well understood.

Developmental-risk theory points to maternal or home factors that typically account for slower rates of cognitive or linguistic development—at least for certain low-income groups—including prenatal practices and the child's vitality at birth, the mother's weaker cognitive facilitation and vocabulary, or higher stress found inside impoverished homes. But if such factors tied to poverty and the mother's social-class position unfolded in these

expected ways, we would not observe such robust social-emotional growth seen among most Mexican American children.

This raises the possibility that either Mexican cultural heritage or the selectivity of women that immigrate to the United States may shape portable social assets, enriching their child's developmental niche or buffering the otherwise corrosive effects of economic insecurity. *Ecocultural theory* suggests that maternal practices, family structure, and child-rearing goals are shaped in adaptation to surrounding economic demands, behavioral norms, and religious codes (Weisner, 2005, Wertsch, 1968). So, Mexican-heritage mothers may reproduce activities and social relations with their children that persist from earlier environs, at least until they acculturate to novel norms found in the United States.

Still, it remains unclear as to whether the earlier social ecology of Mexican heritage serves to advantage young children as they acquire cognitive and oral language skills in the home, at least those features of cognition that are predictive of later school success. Social-class factors, including the exigencies of raising one's child in poverty, may instead drive the cognitive growth of young Mexican American children, more consistent with maternal and home factors highlighted by developmental-risk theory.

This article first describes the wide variability in cognitive growth trajectories displayed by Mexican American toddlers and gaps that surface relative to toddlers of native-born White mothers. We first match both groups on identical levels of cognitive functioning at 9 months of age, then report on differing rates of growth by 24 to 36 months of age; we distinguish between those Mexican American toddlers who keep pace with White peers versus those already falling behind. We then ask whether toddlers of foreign-born Mexican American mothers do, in fact, benefit from an immigrant advantage, relative to children of more acculturated native-born Mexican American mothers. Similarly, we test whether maternal attributes related to social-class position—including poverty status, school attainment, and home practices—help to account for which Mexican American toddlers show strong cognitive growth, as developmental-risk theory would predict. And we explicitly test whether the mother's nativity helps to increase the rate of cognitive development observed among Mexican American children, assessing the presence of any immigrant advantage as ecocultural theory predicts.

The Cognitive and Social Development of Latino Children

Recent work details the lagging cognitive functioning and linguistic proficiencies of Latino children as they enter kindergarten. This includes Mexican

American children who generally enter kindergarten with weaker preliteracy skills (in English or Spanish), familiarity with print materials, and knowledge of mathematical concepts, relative to White peers (Fuller et al., 2010; Reardon & Galindo, 2009). Focusing on infants at about 9 months of age, we earlier found that mean Latino and White scores on the Bayley mental scales were statistically equal. But a gap of one third a standard deviation on this measure opened up between the two groups by 24 to 36 months of age, drawing from a nationally representative birth cohort (Guerrero et al., 2013). Mexican American toddlers displayed the weakest cognitive levels, compared with other Latino subgroups, after controlling for a variety of maternal and family characteristics and practices. Similar disparities have been observed when drawing on other national and local samples, although studies differ in the extent to which they disaggregate Latino or Mexican-heritage subgroups (Crosnoe, 2007; Gutman, Sameroff, & Cole, 2003; Magnuson, Meyers, Ruhm, & Waldfogel, 2004).

This disparity in cognitive growth among Mexican American preschoolers remains paradoxical, given that they display robust birth outcomes and social-emotional development relative to Whites on average (Crosnoe, 2007; Guerrero et al., 2013). It remains unclear theoretically why children's early attributes, maternal practices, or home contexts would yield strong growth in certain domains but not in the cognitive sphere. Epidemiologists and social scientists have detailed healthy prenatal practices—especially among less acculturated, first-generation Mexican American mothers—and resulting low rates of prematurity or unhealthy birth weight for gestational age, despite the impoverished settings into which many are born (Escarce, Morales, & Rumbaut, 2006; Fuller et al., 2010). So, while Mexican American mothers exercise practices that yield healthy births and supportive home environments—resulting in robust social development—their children's developmental pathways may differ when it comes to early communications, cognitive, and preliteracy skills. But little is known about the drivers of these contrasting pathways, either relative to White mothers and families or among Mexican American subgroups.[1]

Second, these differing developmental pathways have yet to be theorized with much clarity. Developmental-risk theory posits that poverty or economic insecurity results in negative maternal practices, stress and conflict, and weaker cognitive stimulation or facilitation inside the home (e.g., Hess, Holloway, Dickson, & Price, 1984; McLoyd, 1998). Yet, ecocultural theory emphasizes the capacity of some cultural groups, including Mexican American immigrants, to buffer economic exigencies and unhealthy parenting practices at times observed in poor communities.

These inconsistent patterns prompt two empirical questions—motivating the present analysis—that pertain to (a) whether maternal attributes and practices typically associated with poverty or social-class position drive rates of cognitive growth of Mexican American toddlers, and (b) whether those of foreign-born Mexican American mothers experience an immigrant advantage when it comes to their toddler's early cognitive growth, relative to toddlers of native-born White or Mexican American mothers.

We consider three sets of factors—largely framed by developmental-risk theory—that point to the biological, social, and economic factors that shape the early development of broad populations of children (for review, see Shonkoff & Phillips, 2000). Little evidence has yet to illuminate whether these factors operate differently for Mexican American children, including whether the immigrant advantage emphasized by ecocultural theory operates effectively, countering social-class effects when it comes to explaining the early cognitive growth of toddlers born to less acculturated, foreign-born mothers.

What Maternal and Home Factors Explain Early Cognitive Growth?

Researchers have begun to identify maternal and home factors associated with toddlers' cognitive functioning among differing Latino subgroups, including Mexican Americans (Ayoub et al., 2009; Guerrero et al., 2013; Glick, Bates, & Yabiku, 2009). Healthier birth outcomes and early home practices tend to favor infants of immigrant or less acculturated mothers of Mexican origin (Landale et al., 2006). But we know little about whether this early immigrant advantage persists for toddlers, especially if this healthy start stems from maternal practices that act to advance early cognitive or language growth as well, and whether these causal processes unfolding in the home differ between children born to foreign- versus native-born Mexican American mothers.

Healthy Births and Early Brain Development

Neuroscientists and epidemiologists detail how prenatal practices and biological drivers help to shape early growth, constrained in some cases by prematurity or low birth weight, which may exert persisting effects on the child's early cognitive growth. Infants who survive a premature birth can experience sustained damage to neurological structures, caused by intracranial hemorrhaging (Papile, 1983), hypoglycemia (Duvanel, Fawer, Cotting, Hohlfeld, &

Matthieu, 1999), or malnutrition (Georgieff et al., 1989). Premature infants typically display smaller head circumferences and slower cognitive maturation, as indicated by lower scores on Bayley scales. Cognitive and motor skills can be suppressed among low birth weight babies, along with a higher incidence of behavior and attention problems (Landry, Chapieski, Richardson, Palmer, & Hall, 1990).

But among Mexican American newborns, the incidence of prematurity or low birth weight remains low, counter to expectations of developmental-risk theory, especially among those born to foreign-born mothers (Escarce et al., 2006). Robust birth outcomes then contribute to cognitive functioning at 9 months of age, again benefiting the offspring of immigrant Mexican American mothers (Fuller et al., 2010). But as maternal practices and family conditions unfold during toddlerhood, we do not know whether earlier advantages persist in shaping cognitive growth. We do know that the stimulating or impoverished facets of home environs, including parental facilitation of cognitive and linguistic operations, act to advance cognitive growth, independent of original birth status (Hess et al., 1984; McCormick et al., 2006)

Family Structure, Relationships, and Mental Health

Social relationships exercised by mothers, situated within a variably supportive family structure, also affect the cognitive growth of infants and toddlers. As Shonkoff and Phillips (2000) summarize, "Starting with the mother's reproductive health and behavior . . . research has confirmed that what young children learn, how they react to events and people around them . . . are deeply affected by their relationships with parents" (p. 226). We know that the mother's mental health is associated with behaviors (e.g., reliance on alcohol or tobacco) that threaten the vitality of newborns and constrain early cognitive growth (Gelfand & Teti, 1990). And when the mother's emotional well-being is jeopardized, stemming from sustained economic hardship and weak social support, a host of risk factors arise that often constrain young children's development (McLoyd, Jayaratne, Ceballo, & Borquez, 1994).

In turn, the family's social structure, including its size and the father's engagement, may further condition the cohesion and richness of early language and cognitive facilitation that occurs inside the home (Halgunseth, Ispa, & Rudy, 2006; Hess et al., 1984; Zajonc, 1976). The ratio of adults to children also helps to account for variation in toddlers' cognitive functioning across ethnic groups, generally disadvantaging toddlers of foreign-born Mexican American mothers (Guerrero et al., 2013). On the other hand, healthy levels of family functioning characterize Mexican American homes,

in concert with low levels of marital conflict, despite much lower incomes on average, compared with Whites (Jung, Fuller, & Galindo, 2013).

The comparatively high share of two-parent households and the father's presence in Mexican American homes also contributes to the quality of early socialization (Halgunseth et al., 2006; Parke & Buriel, 1998). Fathers report spending more time engaged with their infants and toddlers, relative to White peers, except for levels of verbally stimulating activities, controlling for class-related covariates (Cabrera, Hofferth, & Chae, 2011). For immigrant or second-generation Latinos, the father may also mediate acculturation pressures by contributing to second-language acquisition, especially when the mother does not work outside the home (Portes & Rumbaut, 2001).

Paternal education levels significantly predict cognitive facilitation via oral language within Latino households. One study found that father's education was predictive of the infant's Bayley cognitive scores at 9 months among Latino families participating in the national Early Childhood Longitudinal Study (ECLS). This effect appears to operate through strong emotional support, facilitating learning activities, and support of the mother's socialization practices (Cabrera, Shannon, West, & Brooks-Gunn, 2006). Here too, the child's developmental niche appears to be situated in cultural patterns or parenting scripts that may buffer economic exigencies. But whether these cultural assets offset the early cognitive effects of the father's social-class position and educational background remains unknown.

Parenting and Educational Practices

How mothers (tacitly or explicitly) structure daily activities with toddlers varies in the cognitive demands pressed on the child and richness of language deployed (Goodnow, 1997; Hess & Holloway, 1980; Snow, Tabors, Nicholson, & Kurland, 1995). And the complexity of oral language in the home, along with exposure to children's books, labels, and print materials, are predictive of children's cognitive functioning as they enter school (Bradley, Corwyn, Pipes McAdoo, & García Coll, 2001; Clarke-Stewart, 1979; De Feyter & Winsler, 2009).

A mother's engagement with their infant or toddler, and the qualities of this communication, has been measured through interaction tasks: assessing the parent's sensitivity to the child's cues or distress, or exhibiting praise and emotional support (Sumner & Spietz, 1994). Initial research suggests that Latino mothers—yet to disaggregate subgroups—while typically attentive and affectionate toward their infant or toddler, tend to exhibit less complex language or coach young children to take on novel cognitive challenges. These experimental tasks may generalize to weaker levels of cognitive facilitation by mothers

when couched in everyday activities, language interactions, and discipline episodes (Bradley et al., 2001; Cabrera et al., 2006; Livas-Dlott et al., 2010).[2]

Still, work couched in ecocultural theory has illuminated how Mexican American parents often socialize their young children toward behavioral norms that imply particular cognitive demands, such as displaying proper comportment (*bien educado*), respect for adult authority (*con respeto*), and warm and skilled relationships with siblings and kin members (*cariño*; Livas-Dlott et al., 2010; Halgunseth, Ispa, & Rudy, 2006), at times reinforced by strong religiosity (Oh & Yoshikawa, 2012). Such purposeful parenting appears to shape robust social-emotional development, even when compared with White peers (Crosnoe, 2007). This challenges the developmental-risk postulate that a family's low class position will be associated with less healthy parenting. And initial work shows that cognitive-developmental benefits, such as early knowledge of mathematical concepts, can flow from such robust growth in social-emotional development for Mexican American preschoolers (Galindo & Fuller, 2010). These benefits may be stronger among children of foreign-born Mexican American mothers, evidence of the immigrant advantage, independent of the family's social class (García Coll & Marks, 2011). But here too, we know little about whether such advantages lift the early cognitive growth of Mexican American toddlers.

Overall, as Mexican American parents acculturate and experience upward mobility, we would expect a lessening of developmental risks, if we assume that social-class position drives the quality of the child's developmental niche. This includes greater economic stability and less stress in the home, along with better access to quality health care, schools, and social networks (De Feyter & Winsler, 2009; Massey & Taylor, 2004).

We know that immigrant Mexican mothers engage in stronger prenatal practices than later-generation peers, on average, and the social development of Mexican American children is quite robust on average, even when raised in low-income households (Landale et al., 2006). So, for particular stages and domains of child development, the mother's acculturation to norms and behavioral scripts found in low-income neighborhoods may represent negative ecocultural adaptations, boosting developmental risks. On the other hand, upward mobility experienced by many native-born mothers, associated with rising maternal education and economic security, may strengthen home factors that advance the cognitive growth of Latino toddlers.

Research Questions

We first describe levels of cognitive growth among diverse Mexican American toddlers and gaps in cognitive development when compared with toddlers of

native-born White mothers. Developmental-risk theorists would expect to see sharp disparities between groups, given average differences between Mexican-heritage and White families in family income, maternal education, and social-class position. Ecocultural theorists would argue that mean differences may be attenuated by robust parenting practices, as seen in the social-developmental domain, or that disparities are narrower for toddlers of foreign-born Mexican American mothers benefitting from the immigrant advantage.

To examine variation in growth among Mexican American children, we devised a strategy to compare rates of growth, first matching them to corresponding White children on their 9-month cognitive status, then observing the share of Mexican American children who kept pace in their growth relative to peers of native-born White mothers through 24 to 36 months of age.

Second, we examined how the three sets of predictors emerging from the literature help to identify which Mexican American toddlers keep pace with White peers, and which do not.

Third, we built a series of regression models to ascertain the extent to which the mother's nativity and social-class position explain the toddler's level of cognitive growth. It may be that class-related attributes, along with maternal practices, hold the consequences predicted by developmental-risk theorists, but only for children of more acculturated, native-born mothers. In contrast, typical risk factors associated with social class may be less influential for toddlers of foreign-born mothers. These analyses inform the validity of developmental-risk and ecocultural theory in explaining the early cognitive growth of Mexican American toddlers, examining mechanisms that may operate differently among subgroups. Our specific empirical questions include the following:

1. How does the cognitive functioning of the mean Mexican American toddler compare with the average toddler of a White native-born mother at about 9 and 24 months of age?
2. What share of Mexican American toddlers keep pace with the 24-month cognitive functioning of peers (of native-born White mothers) matched at 9 months, that is, displaying a similar growth rate? What share fall behind during the toddler period?
3. To what extent do risk factors—such as those associated with birth outcomes, the mother's social-class position, and maternal practices—help in predicting which Mexican American toddlers keep pace in terms of cognitive growth by 24 months after being matched with White peers at 9 months.
4. Do these risk factors and accounts of early growth differ for Mexican American toddlers of native- versus foreign-born mothers, supporting or contesting the theory of immigrant advantage?

Method

Sample

The ECLS, Birth Cohort (ECLS-B) is a nationally representative sample of children born in 2001, fielded by the National Center for Education Statistics (NCES; Nord, Edwards, Andreassen, Green, & Wallner-Allen, 2006). NCES employed a stratified clustered survey design to select a probability sample of births. Home visits and child assessments were successfully fielded with 10,700 families when focal children were about 9 months of age, and again at about 24 to 36 months (77% of all births sampled; all *n* rounded to the nearest 50 under NCES rules).

Our analysis compared children of Mexican American and peers of native-born White mothers (the reference group). So, we excluded children of African American ($n = 1{,}100$) and foreign-born White mothers ($n = 450$) for the present study. We include non-Mexican Latina mothers and children ($n = 500$) only when reporting comparative descriptive results. We excluded Mexican American and White children for whom data were incomplete over time, that is, if their birth mother did not participate in the home visits at both 9 and 24 months. Given our focus on how family structure, maternal attributes, and social practices inside the home may help to explain the cognitive growth of toddlers, we excluded children who suffered from serious birth defects, such as spina bifida or heart defects or another disability. After applying these exclusion criteria, 950 Mexican American children and 3,600 children of native-born White mothers remained with complete data over the 9- to 24-month period ($N = 4{,}550$).

Measures

Our analysis focuses on cognitive functioning as outcomes and their relation to the covariates identified above. We utilized covariates gauged at the 24-month home visit unless they were only available from the 9-month home visit, as specified below.

Children's cognitive and language proficiencies. Cognitive functioning at 9 and 24 months was gauged by reduced forms of the Bayley mental scales (Najarian, Snow, Lennon, Kinsey, & Mulligan, 2010; Nord et al., 2006). The short version of the 9-month Bayley's assesses the infant's use and comprehension of words, and purposeful action with objects. The 24-month instrument gauges children's memory, expressive and receptive vocabulary, concept attainment, and rudimentary problem-solving skills. Both measures were administered in Spanish if requested by the mother. Inter-item reliabilities were high for the 9-month (Cronbach $\alpha = .76$) and 24-month ($\alpha = .88$) Bayley's.[3]

Biological factors and birth events. Birth certificates provided data on prematurity (more than 21 days preterm) and birth weight status (normal, greater than 2,500 grams; moderately low, 1,500-2,500; very low, less than 1,500). General child health measures are not consistently predictive of children's early cognitive growth and therefore were excluded.

Maternal mental health. This was gauged at 9 months with the short form of the Center for Epidemiological Studies Depression Scale, consisting of 12 items related to the mother's absence or presence of negative emotions, for example, "How often in the past week did you . . . feel depressed?" "Have crying spells?" (Gelfand & Teti, 1990).

Mother's cognitive facilitation and educational practices. Mothers reported at 9 and 24 months about reading practices, telling stories, and early exposure to books and print materials (drawn from the Home Scale; Bradley et al., 2001). A reliable index combined the reported frequency of reading, telling stories, and singing together ($\alpha = .62$).

The mother's propensity to foster the child's cognitive and communicative proficiencies was measured at 9 months with the Nursing Child Assessment Satellite Training (NCAST) scales in which the mother and infant engage in teaching tasks, such as, grasping a rattle, taking a lid off a container, and turning pages of a book. These interactions were videotaped and scored on several dimensions, including the mother's ability to communicate the task clearly, stimulate the child's interest and progress, and express warm affect (Banerjee & Tamis-Lemonda, 2007). Principal components analysis yielded four well-distributed factors: the mother's level of praise for the child's actions, maternal warmth, responsiveness when the child showed distress, and cognitive facilitation in terms of coaching the child with precise language and encouragement.[4]

Social-class indicators, family structure, and maternal attributes. Risk factors are manifest in a range of covariates related to the mother's class position and family social structure. We included dichotomous predictors for whether the child's father resided in the home, and whether the mother worked full-time (35 hours or more) or part-time outside the home. The ratio of resident children under age 5 years to adults (18 and older) was calculated at 24 months. We also included dummy predictors for the mother's level of formal schooling (completed high school, some college, bachelor's degree or more).

Nativity, home language, and acculturation. To test whether children of immigrant mothers displayed advantages, we included a dichotomous predictor for

whether the mother was native- or foreign-born, and whether Spanish was the dominant home language, as reported by the mother.

Data Analysis

Structure of birth sampling. To correctly account for the complex structure of the ECLS-B survey (sampling weights, stratification, and clustering), we performed design-based analyses employing the Stata 11 suite of *svy* commands, which include analogues of customary statistical methods such as *t* tests and linear regression (StataCorp, 2009).[5] ECLS-B provides sampling weights, constructed to account for nonresponse due to attrition or nonadministration of a given instrument (Nord et al., 2006). Thus, we applied different weights for analyses of the 9- and 24-month data (W1C0 and W2C0, respectively).

Accounting for child age at points of assessment. At each child assessment, the actual ages of many children differed from the nominal age at which they were to be assessed, largely due to the challenge of fielding so many home visits. At the nominal 9-month assessment, the median (survey-weighted) age was 9.9 months, the inter-quartile range (IQR) was 9.2 to 11.0 months, and the full age range was 6.2 to 22.1 months. At the nominal 24-month assessment, the median age was 24.2 months, the IQR was 23.7 to 24.8 months, and the full range was 20.1 to 37.7 months.

Possible resulting biases were addressed in two ways. First, we looked for ethnic differences in the actual age distributions at each assessment point. At the nominal 9- and 24-month assessments, the means, medians, IQRs, and full ranges for Mexican American ages were nearly identical to those for White children. Second, we used the ECLS-B age-adjusted standardized *t* scores ($M = 50$, $SD = 10$) for the 9- and 24-month Bayley's assessment. A child's score was based on how she compared with other children of the same actual age in months. The use of standardized *t* scores at 9 and 24 months converted from the Bayley's raw scores allows assessment of how groups of children are developing relative to other children, although regression coefficients cannot be used to calculate differences or gains in raw scores.

Results

Comparing Children and Mothers Among Ethnic Groups

Table 1 displays features of children at birth or when the 9- and 24-month home visits were conducted with Mexican American or native-born White

Table 1. Attributes of Children, Mothers, and Families at Birth, and at 9- and 24-Month Home Visits by Mother's Ethnicity and Home Language (N = 4,550, Means and Standard Errors Reported for Continuous Variables).

		Mexican American			
	White	English home language	Spanish home language	Other Latinos	*F* statistic or *t* statistic
Focal child's cognitive score					
Bayley mental score, 9 months	50.6 (0.30)	49.4 (0.63)	49.1 (0.71)	50.1 (0.52)	2.63*
Bayley mental score, 24 months	52.7 (0.25)	45.9 (0.70)	45.0 (0.47)	46.6 (0.73)	122.09***
Birth events					
Low birth weight (%)	6	6	6	7	n.s.
Premature >21 days (%)	2	3	2	4	n.s.
Maternal and family attributes (at 24-month home visit unless otherwise specified)					
Mother foreign born (%)	0	53	82	64	359.55***
Years mother resided in the United States	–	18.3 (0.73)	13.6 (0.49)	17.3 (1.00)	405.29***
Father lives in home (at 9 months, %)	90	81	85	77	22.83***
Family below federal poverty line at 9 months (%)	12	45	44	26	137.17***
Mother completed some college or more (%)	62	25	17	34	161.96***
Mother works full- or part-time (%)	58	46	38	56	26.67***
Mother shows depressive symptoms (at 9 months, %)	49.5 (0.22)	49.6 (0.45)	49.8 (0.72)	48.7 (0.45)	n.s.
Ratio, children to adults in home	0.83 (0.01)	0.86 (0.03)	0.72 (0.02)	0.72 (0.02)	n.s.
Parenting practices					
Mother reads with toddler daily (%)	59	28	18	24	145.92***
Mother tells stories daily (%)	32	23	17	20	17.01***
Mother-child interaction tasks at 9 months (*M* factor scores, NCAST observations)					
Maternal praise and encouragement	2.2 (0.04)	1.7 (0.08)	1.6 (0.14)	1.9 (0.10)	15.12***
Maternal responsiveness	3.9 (0.04)	3.8 (0.10)	3.7 (0.11)	3.7 (0.10)	4.91**
Cognitive facilitation	2.7 (0.01)	2.6 (0.05)	2.6 (0.04)	2.7 (0.04)	4.35*

Note. Design-based chi-square test computes an *F* statistic. NCAST = Nursing Child Assessment Satellite Training Scale. For between-group tests: *p < .05. **p < .01. ***p < .001.

mothers, including factors that may predict early cognitive growth. We observed no significant differences in the incidence of prematurity or low birth weight between Mexican American and White newborns, despite wide differences in economic indicators associated with risk factors detailed below. This suggests the buffering of economic exigencies by many Mexican American mothers, at least during the prenatal period.

Clear differences are seen between Mexican American households where English versus Spanish was the dominant language. In homes where Spanish was the dominant language, 82% of the mothers were foreign-born, compared with just 52% of the mothers being foreign born in English-speaking households. Over two fifths of Mexican American families lived beneath the federal poverty line at 9 months, compared with 12% of native-born Whites.

Mean levels of maternal education differed dramatically as well. Three fifths (62%) of native-born White mothers had completed some college, compared with 25% and 17% of Mexican American mothers in English- and Spanish-speaking homes, respectively. Maternal practices with the focal child varied across groups. Just under three fifths of White mothers (59%) reported reading with their toddler every day, compared with 28% of English-speaking and 18% of Spanish-speaking Mexican American mothers. White mothers also displayed higher levels of praise and encouragement and verbal responsiveness, along with stronger cognitive facilitation, during the NCAST interaction tasks with their infant at 9 months. These differences are consistent with a developmental-risk framework, revealing no advantage for children of foreign-born mothers.

The Cognitive Functioning of Mexican American and White Children

Our first research question asks how the cognitive status of the mean Mexican American child compares with the average White peer (of a native-born mother) at about 9 and 24 months of age. Table 1 reports very small differences in Bayley's scores at 9 months. The mean *t* score for Mexican American infants in Spanish-speaking homes equaled 49.1, or just 1.5 standardized points below Whites (0.16 *SD*). But by 24 months, the gap in mean Bayley's scores between White and Mexican American toddlers from Spanish-speaking homes grows to 7.7 points (0.79 *SD,* $p < .001$). The gap is only 0.9 points smaller for Mexican-heritage infants raised in English-speaking homes. This widening disparity between Mexican American children and peers of native-born White mothers—again consistent with a

developmental-risk frame—speaks to our first question, as well the issue of how growth rates are distributed among differing Mexican American subgroups.

What Share of Mexican American Toddlers Keep Pace?

Ideally, researchers could identify the share of Mexican American toddlers that display robust cognitive growth and the underlying causes that drive stronger trajectories, and then match applied interventions to these contributing factors. Our second question advances this line of reasoning by asking, what share of Mexican American toddlers keep pace with the 24-month cognitive functioning of their matched 9-month peers of native-born White mothers? Given the remarkable widening of the cognitive gap between 9 and 24 months, we aimed to estimate change in the relative standing of Mexican American and White children between these two time points.

Yet, rather than comparing Mexican American children as a whole with White children as a whole, as we did above, we now want to compare the 24-month status of Mexican American children with the status of their White 9-month peers. That is, within subgroups of children who shared the same cognitive status at 9 months, how did Mexican Americans compare with their White peers 15 to 27 months later? How do rates of cognitive growth differ over the toddler period after matching Mexican American and White children on their cognitive status at late infancy?

To make this comparison, we first fit a linear regression model predicting age-adjusted 24-month Bayley scores from ethnicity (1 = *Mexican American*, 0 = *native-born White*) and age-adjusted 9-month Bayley scores. To allow for a nonlinear relation between 9- and 24-month Bayley *t* scores, our initial regression model included linear, quadratic, and cubic terms for population-mean-centered 9-month Bayley's, as well as interactions of each of these terms with ethnicity. But quadratic terms proved insignificant. The three retained predictors were significant as shown in Table 2.

The significance of the ethnicity by 9-month Bayley's interaction term indicates that the slopes of the 24-month, compared with the 9-month, Bayley's regression lines for Mexican Americans and Whites differ: the latter displaying a steeper slope (or rate of growth) as illustrated in Figure 1. This means that within a 9-month peer group, the magnitude of the White versus Mexican American cognitive-functioning gap at 24 months depends on the magnitude of its shared 9-month Bayley score. That is, the within-peer-group gap at 24 months grows wider for children sharing higher 9-month Bayley scores. For example, for the 9-month peer group who shared a 9-month

Table 2. Predicting Age-Adjusted 24-Month Cognitive (Bayley) Score From 9-Month Cognitive Score and Ethnic Membership (N = 4,550).

	Unstandardized regression coefficient	*SE*	*t* statistic
Ethnicity (1 = *Mexican American*, 0 = *White*)	−6.87	(0.54)	−12.79***
Bayley score at 9 months (population-mean-centered)	0.27	(0.02)	13.67***
Mexican American status × Bayley score at 9 months	−0.17	(0.04)	−3.71***
Model statistics			
Constant	52.49		
F statistic for model	140.56***		
r^2	.14		

Note. *SE* = standard error. ***$p < .001$.

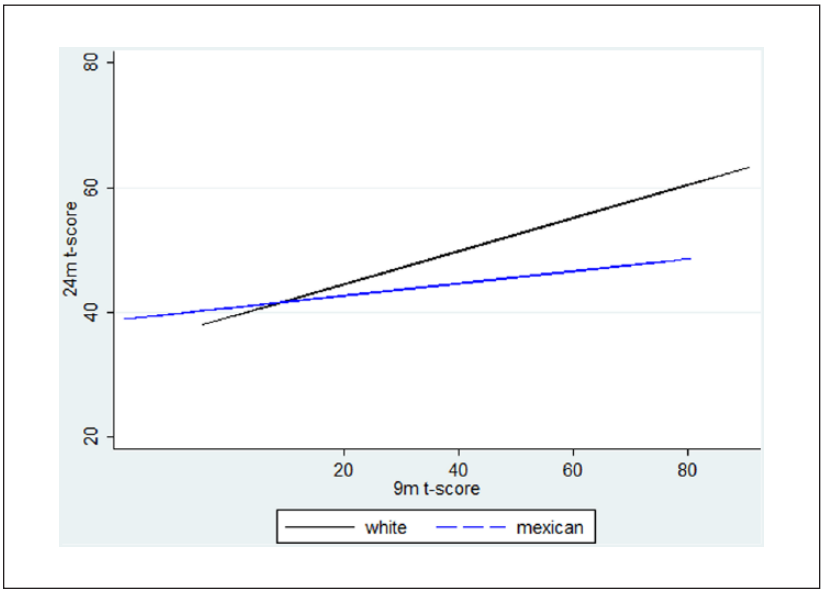

Figure 1. Predicted 24-month standardized Bayley *t* scores from 9-month scale scores for children of Mexican American or native-born White mothers (N = 4,550).

Bayley's score at the population mean of 50, the ethnic gap in cognitive functioning was estimated at 6.8 points (0.68 *SD, p* < .001). For the 9-month peer group with a shared Bayley score at one standard deviation below the population mean (*t* score = 40), the ethnic gap equaled 5.1 (0.51 *SD, p* < .001).[6]

A second procedure for estimating the 24-month cognitive status of Mexican Americans relative to their matched 9-month White peers involved classifying each Mexican American child in terms of how well she kept pace with the subgroup of White children who proximally shared her 9-month cognitive status. This holds constant any prior developmental differences prior to the 9-month assessment, isolating on growth we observed between the 9- and 24-month assessments. It also avoids bias that would be introduced by simple regression toward the mean in terms of the Bayley scores taken over the two time points.

We implemented this procedure by considering whether the 24-month cognitive status of a given Mexican American child was below the 25th percentile, between the 25th and 50th percentiles, or at or above the 50th percentile of his White 9-month peers. If the child belonged to the first group, he was seen as falling behind the bulk of his White 9-month peers; if in the third group, she was seen as keeping pace (or better) with her White 9-month peers; and if in the second group, she was in between.

To illustrate, imagine that the regression coefficient estimates in Table 2 are precisely correct: The table gives the true regression of 24-month Bayley scores on ethnicity and 9-month Bayley scores. If so, then the true regression for White children of 24-month Bayley scores on 9-month Bayley scores is as follows:

$$\text{BAYLEY24} = 52.4 + 0.27 \times \text{Population-Mean-Centered BAYLEY9} + \text{error term.}$$

Native-born White ethnicity is represented by ethnicity = 0. Then, under the usual (i.e., nonsurvey-oriented) linear regression assumptions, for White children with the population-mean *t* score of 50 at 9 months, their 24-month Bayley *t* scores are normally distributed with a mean of 52.4 and an unknown standard deviation. Given the normally distributed scores, the 25th percentile score for this 9-month peer group of White children is 0.67 of a standard deviation below the mean (52.5). Indeed, within any 9-month peer group of White children, its 25th percentile score at 24 months is 0.67 standard deviation below its mean. As the means are given by the true regression line, and all 9-month White peer groups are assumed to share the same standard deviation, the 25th percentile score for Whites is given by a line that is

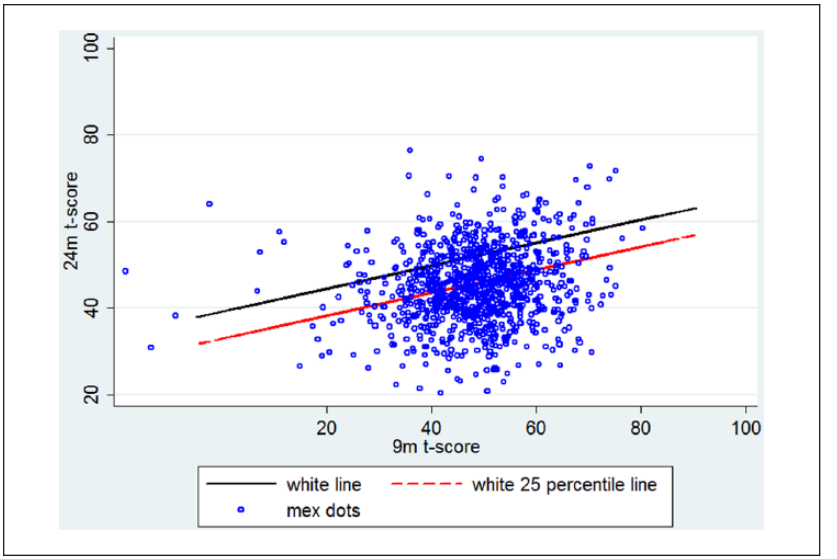

Figure 2. Mexican American toddlers with 24-month standardized Bayley *t* scores below the 25th percentile growth trajectory for toddlers of native-born White mothers, based on 9-month scores (N = 4,550).

parallel to the true White regression line but 0.67 of a standard deviation below it.

Then, to sort the Mexican American children into the three groups, we assumed that normality and homoskedasticity more or less held for the regression model given in Table 2. We refit the regression model via weighted least squares, using the sampling weights. This gave us the same regression coefficient estimates as in Table 2 and yielded an estimate of the assumed common standard deviation. We then carried out the classification based on the estimated White regression line and the estimated shared standard deviation. The estimated White regression and 25th percentile lines are shown in Figure 2, along with the scatter plot of Mexican American 24-month Bayley scores. We classified White children according to the same method for comparison.

Based on this procedure, we estimated that 24.5% of White children fell into the *poor-growth* category (below 25th percentile), 24.5% fell in the *mediocre-growth* category (between 25th and 50th percentile), and 51% in the *strong-growth* category (at or above the 50th percentile, the regression line), very close to the expected quartile split.

Returning to our second research question, we then estimated that 53.4% of the Mexican American children fell in the poor-growth category, 24.8% in

the mediocre category, and 21.8% in the strong-growth category ($p < .001$). The magnitude of these differences, consistent with developmental risk, is rather troubling. Over half (53.4%) of all Mexican American children show the comparatively flat cognitive growth that just one quarter of White toddlers displayed. And just one fifth (21.8%) of Mexican American toddlers display the strong growth exhibited by the top half of White toddlers.

Explaining Slower Cognitive Growth of Mexican American Toddlers

Our third research question then asks, what dimensions of social class, maternal attributes, and home practices help to explain which Mexican American toddlers keep pace with their peers of native-born White mothers? We begin by describing how Mexican American children in the poor-growth category ($n = 500$, falling below the 25th percentile of their White 9-month peers at 24 months) differ from those in the strong-growth category ($n = 200$, that is, keeping pace with their White 9-month peers).

To illustrate, when we split Mexican American toddlers into the two groups, of the toddlers lagging behind, 71% of their mothers were foreign-born, compared with 47% of the mothers of strong-growth children. Toddlers of immigrant mothers are distinctly disadvantaged in terms of their rate of cognitive growth, compared with those of native-born mothers, contrary to the immigrant-advantage argument. Similarly, 38% of the mothers in the strong-growth group reported reading with their toddler daily, compared with just 17% for the weak-growth group. Just one-fourth of mothers (29%) whose toddlers kept pace with their White 9-month peers had completed some college or more, compared with only 17% of the mothers whose toddlers were in the poor-growth group.

Table 3 reports complete contrasts for additional maternal and family variables. Toddlers in the weak-growth group were more likely to growing up in poverty (44%) than those in the strong-growth group (34%). The latter set of mothers also displayed significantly stronger praise and encouragement in the NCAST mother-child interaction tasks, compared with the former group of mothers. Mothers in the strong-growth group were more likely to work outside the home than peers in the weak-growth group, additional evidence that social-class position matters, consistent with a developmental-risk frame. At the same time, the lack of significant differences in observed levels of maternal responsiveness, warmth, and cognitive facilitation suggests that earlier cultural patterns inside the home (tied to ecocultural theory) may act to sustain positive parenting even within economically disadvantaged Mexican American homes.

Table 3. Attributes of Mexican American Mothers and Families With Toddlers That Display Contrasting Levels of Cognitive Functioning at 24 Months of Age (n = 750 for Quartile Breakdown).

	Mexican American mothers with toddlers		
	At or above 50th percentile of their White 9-month peers (n = 200)	Below 25th percentile of their White 9-month peers (n = 550)	F statistic or t statistic
Birth outcomes			
Low birth weight (%)	4	7	n.s.
Premature >21 days (%)	2	3	n.s.
Maternal attributes			
Foreign born (%)	47	71	18.75***
Years resided in the United States	20.2	15.0	5.12***
Completed some college or more (%)	29	17	5.79*
Works full- or part-time (%)	52	42	4.97*
Depressive symptoms threshold (%)	49.7	49.9	n.s.
Family structure and demographics			
Home language, not English (%)	35	44	4.05*
Father of focal child resides (%) in the household	82	85	n.s.
Family below federal poverty line (%)	34	44	4.27*
Ratio, children to adults in home	0.81	0.79	n.s.
Parenting practices			
Mother reads with toddler every day (%)	38	17	13.91***
Mother tells stories daily (%)	31	17	10.66**
Mother-child interaction tasks (NCAST observations, M factor scores)			
Maternal praise, encouragement	2.1	1.5	3.04**
Maternal responsiveness	3.8	3.7	n.s.
Maternal warmth	2.2	2.1	n.s.
Cognitive facilitation	2.6	2.6	n.s.

Note. Sorting of Mexican American toddlers between the two groups is done relative to the 50th or 25th percentile score of their White 9-month peers. Chi-square and t tests are design-based, the former yielding F values. NCAST = Nursing Child Assessment Satellite Training.
*p < .05. **p < .01. ***p < .001.

Next, we use the results from Table 3 to construct an expanded version of the regression model shown in Table 2. The initial set of predictors included

ethnicity, 9-month Bayley's, and the ethnicity by 9-month Bayley's interaction, as well as the variables from Table 3 that showed high- versus low-performing differences (using the standard of $p<.10$ for inclusion in these complete estimation models). We reasoned that this latter set of covariates might help to explain much of the Mexican American versus White cognitive gap at 24 months. After fitting this model, we removed nonsignificant predictors. We then tested interaction terms with ethnicity to identify practices or attributes, specific to Mexican American mothers, which may covary with toddlers' levels of cognitive growth.

Table 4 reports estimations that include as predictors ethnicity, 9-month Bayley's, the ethnicity by 9-month Bayley's interaction, seven covariates from Table 3, and three interactions with ethnicity. The main effect of ethnic membership remains significant, but the coefficient falls from −6.87 (Table 2) to −2.21 with all covariates included. The negative ethnicity by 9-month Bayley's interaction remains significant. This indicates that after controlling for covariates, the within-9-month-peer-group gap at 24 months grows *wider* for children sharing *higher* 9-month Bayley scores.

Birth events continue to be associated with cognitive status at 24 months (net other covariates), especially low birth weight. This often advantages Mexican American toddlers, given their generally healthy birth status (Landale et al., 2006). Even after entering social-class indicators, we see strong associations of maternal attributes and parenting practices with 24-month cognitive outcome. In general, toddlers display stronger 24-month Bayley's when their mothers report some college, work outside the home, and report reading with, and telling stories to, their toddler every day, consistent with the developmental-risk perspective.

Just two interaction terms pertaining to maternal attributes or practices approached statistical significance (both $p < .06$). This included a lower effect of reading practices and maternal school attainment for children of Mexican American mothers, suggesting that practices typically associated with the mother's class position may not always be valid predictors of children's cognitive growth in Mexican American households. A similar pattern is seen for the highest level of mother's school attainment.

To inform our final research question—directly testing a possible immigrant advantage—we ran the same explanatory model only for Mexican American toddlers, splitting children between those born to native- versus foreign-born mothers (Table 5). We see that cognitive growth is significantly lower for toddlers of foreign-born Mexican American mothers (Column 1). Beyond reading together daily, the other predictors tied to the mother's class position are not significantly related to cognitive growth. The reading predictor remains significant for children of native-born, but not of foreign-born,

Table 4. Regression of 24-Month Cognitive Functioning (Standardized Bayley) Scores for All Children on Mexican American Membership, Birth Events, 9-Month Bayley Score, and Maternal Attributes and Practices (n = 4,500).

	Unstandardized coefficient	*SE*	*t* statistic
Ethnicity (1 = *Mexican American*, 0 = *White*)	−2.21	(0.94)	−2.35*
Birth events			
Very low birth weight	−1.78	(0.49)	−3.64***
Earlier cognitive proficiency			
Bayley score at 9 months	0.25	(0.02)	13.20***
Mexican American × Bayley score at 9 months	−0.16	(0.04)	−3.65***
Family below federal poverty line	−1.88	(0.66)	2.83**
Maternal attributes and practices			
Mother works 35 hours or more	1.31	(0.37)	3.59**
Mother completed some college	1.67	(0.47)	3.56**
Mother completed graduate degree	4.46	(0.67)	6.67***
Mother reads with toddler every day	3.55	(0.64)	5.51***
Mother tells stories 3 to 6 times per week	1.63	(0.53)	3.10**
Mother tells stories every day	1.36	(0.43)	3.19**
Interaction terms × Mexican American status			
Mexican × mother tells stories 3 to 6 times per week	−1.94	(0.98)	−1.97†
Mexican × mother attended graduate school	−6.79	(3.46)	−1.96†
Model statistics			
Constant	45.72		
F statistic	60.19***		
r^2	.21		

Note. Only significant interactions reported. *SE* = standard error. †$p < .06$. *$p < .05$. **$p < .01$. ***$p < .001$.

mothers; the model for foreign-born mothers fails to reach statistical significance. These results suggest that risk factors generally correspond with the family's social-class attributes, although home practices of foreign-born mothers may operate differently than for native-born peers. Toddlers of

Table 5. Regression of 24-Month Cognitive Functioning (Bayley) Scores for Children of All, Native-, or Foreign-Born Mexican American Mothers (*ns* = 950, 400, and 550, Respectively) on Birth Events, 9-Month Bayley Scores, and Maternal Attributes and Practices.

	All Mexican American children		Mexican American children with native-born mother		Mexican American children with foreign-born mother	
	Regression coefficient (*SE*)	*t* statistics	Regression coefficient (*SE*)	*t* statistics	Regression coefficient (*SE*)	*t* statistics
Birth events						
Low birth weight	−1.84 (0.91)	−2.03*	−1.88 (1.86)	−1.01	−1.89 (1.05)	−1.81
Very low birth weight	−2.08 (1.00)	−2.08*	−3.10 (1.71)	−1.82	−1.16 (1.35)	−0.86
Earlier cognitive proficiency						
Bayley score at 9 months	0.08 (0.04)	2.07*	0.17 (0.08)	2.18*	0.03 (0.04)	0.81
Family above federal poverty line	0.47 (0.63)	0.75	1.14 (1.16)	0.99	0.17 (0.74)	0.23
Maternal attributes and practices						
Mother foreign-born	−2.76 (0.74)	−3.75***				
Mother works less than 35 hours	−0.27 (0.96)	−0.29	−0.37 (1.86)	−0.2	−0.47 (1.06)	−0.44
Mother works 35 hours and over	1.00 (0.65)	1.55	0.04 (1.19)	0.04	1.59 (0.79)	2.01*
Mother completed some college	−0.03 (1.21)	−0.02	0.31 (1.50)	0.21	−0.29 (1.56)	−0.19
Mother completed graduate degree	−3.09 (3.58)	−0.86	−3.84 (4.35)	−0.88	0.00 (8.72)	0
Mother reads with toddler 3 to 6 times per week	0.27 (0.85)	0.32	0.17 (1.70)	0.1	0.75 (0.89)	0.85
Mother reads every day	3.33 (0.94)	3.55**	4.86 (1.59)	3.06**	1.78 (1.26)	1.42
Mother tells stories 3 to 6 times per week	−0.03 (0.91)	−0.04	−1.59 (1.62)	−0.98	0.56 (0.85)	0.65
Mother tells stories every day	1.41 (1.07)	1.32	1.40 (1.71)	0.82	1.67 (1.31)	1.28
Constant	45.86		45.56		43.05	
Model statistics						
F statistic	3.40***		4.57***		1.43	
r^2	.09		.13		.03	

Note. *SE* = standard error.
*$p < .05$. **$p < .01$. ***$p < .001$.

native-born Mexican American mothers are better able to keep pace with White peers in their rate of cognitive growth. But conventional measures of class and maternal attributes or practices hold little efficacy in estimating growth of toddlers born to foreign-born mothers.

Discussion

Overall, we find considerably lower rates of cognitive growth among most Mexican American toddlers, compared with toddlers of native-born White mothers. The mother's social-class position, consistent with developmental-risk theory, largely explains flatter growth trajectories. Indicators of class position include maternal education, employment status, and certain home practices. At the same time, factors stemming from a developmental-risk frame show weak efficacy in explaining the cognitive growth of Mexican American toddlers of foreign-born mothers. Nor do these two subgroups of Mexican American mothers display differing levels of maternal responsiveness, warmth, or cognitive facilitation—evidence of the ecocultural persistence of supportive parenting practices. Still, the influence of these factors on their toddler's early cognitive growth is largely eclipsed by the more consequential home practices and markers of maternal and family social class reported above.

We moved beyond prior work by focusing both on mean tendencies and variation in the cognitive growth of *diverse* Mexican American children, finding that the cognitive functioning of Mexican American infants is just below that of White peers, on average (about 0.10 *SD* lower on the Bayley's). But this gap in mean Bayley scores widens to 0.76 *SD* at 24 to 36 months of age for Mexican American children raised in Spanish-speaking homes vis-à-vis White peers. The gap is significantly wider for toddlers of foreign-born mothers, compared with those of native-born mothers, a key finding that counters claims of an immigrant advantage in the cognitive domain during the toddler period.

After statistically matching Mexican American and White toddlers on their 9-month Bayley scores and their precise age of assessment, then tracking growth, we found that 54% of Mexican American children fell below the 24-month cognitive status of the one fourth of White peers with weakest rate of growth. One positive finding is that about one fifth of all Mexican American toddlers do display levels of cognitive proficiency at 24 months that equal or exceed the mean status of their White peers matched at 9 months. But four fifths fall below the cognitive proficiency of the average matched White toddler.

Our findings show that negative birth events and the biological processes implied continue to constrain cognitive growth into the toddler period,

stemming from low birth weight and multiple births (mostly twins). Family structure and social relationships contributed little to our estimations of growth between 9 and 24 months of age. The one exception is that children growing up in families that fall below the poverty line display significantly weaker cognitive growth, consistent with developmental-risk theory.

The educational background of the mother and parenting practices displayed the most consistent positive associations with growth over the 9- to 24-month period. Children showed more robust cognitive development when their mothers had completed some college and when they engaged their child in daily reading and storytelling. These indicators of social engagement and cognitive facilitation may serve as broader proxies for the mother's steady interaction with the toddler, the mother's own language skills, and collateral dimensions of caring and closeness that plausibly boost the child's cognitive growth.

We found that White mothers displayed praise and encouragement more frequently on videotaped tasks, compared with Mexican American mothers. More work remains to understand how cognitive demands may be embedded in differing mixes of household activities among cultural groups (Livas-Dlott et al., 2010). Yet, maternal education and practices that encourage the child's successful completion of cognitively demanding tasks favored the toddlers of White parents, on average, compared with Mexican American peers, and these practices covaried with the mother's social-class position.

We observed few factors that differentially affected the cognitive growth of Mexican American children, relative to Whites. The interaction of poverty status and Mexican American membership was significantly negative, indicating that economic exigencies threaten cognitive growth even more in these families. At the same time, the factors linked to biological processes (birth status), along with maternal education and interactive practices with the child, largely explained the overall negative association of Mexican American status and cognitive growth. So, after the positive benefits of strong prenatal practices are realized by the infant—favoring offspring of Mexican American mothers—developmental-risk factors appear to operate with greater force than any positive mechanisms situated within a Mexican ecocultural heritage and manifest home practices.

Future work might dig into whether the cognitive or communicative operations gauged by conventional measures are sensitive to the demands of everyday activities as found in diverse Mexican American families. Some items contained within the Bayley scales related to cognitive facilitation, for instance, require an observed performance between mother and child, completing a task that depends upon the oral language, gestures, and encouragement of the mother. Mothers may variably invoke such interactions across particular cultural or class groups, requiring the facilitated performance of

the child in culturally situated ways (Hess et al., 1984; García Coll & Marks, 2011; Livas-Dlott et al., 2010). Yet, the child's proficiency in such basic cognitive and communicative tasks, tapped by Bayley's or videotaped observational measures (e.g., responding to the mother's utterances, receptive and expressive vocabulary, and performing tasks with toys), remains predictive of preliteracy skills and oral language as Mexican American children enter kindergarten.

We conducted an exploratory analysis, for example, which found that Bayley scores at 24 months account for almost one quarter of the variance in the preliteracy battery administered to children participating in ECLS-B at about 48 months of age. The matched growth curve for Mexican American children flattens even more through 48 months of age relative to White peers matched at 24 months of age.[7]

How do these findings advance our understanding of the advantages or comparative disadvantages experienced by children of immigrant mothers? First, we now clearly see how the early development of Mexican American children is uneven across domains. That is, robust trajectories in health and social-emotional domains do not guarantee similar vitality in cognitive and linguistic proficiency, at least not observed during the toddler period. Certain maternal practices, including responsiveness, warmth, and cognitive facilitation observed in videotaped tasks, are equally strong for Mexican American mothers—some evidence of positive parenting that appears to vary among households independent of social class.

Overall, however, we found no support for the immigrant-advantage argument when it comes to the cognitive development of toddlers: Growth rates were flatter for children of foreign-born Mexican American mothers, compared with offspring of native-born peers, typically situated in a stronger social-class position with fewer evident developmental risks inside the home. While foreign-born mothers may exercise socialization practices that advance their young child's social and emotional growth, we did not observe any differences in home practices that favored the cognitive growth of their toddlers, compared with the stronger practices exhibited by native-born Mexican American mothers.

We do have much to learn about the a priori sources of beneficial maternal practices in Mexican American homes, whether stemming from the mother's heritage culture or novel social behaviors learned by mothers in the U.S. context. As certain parenting behaviors—beyond the persisting benefits of robust prenatal practices and the infant's early health status—do advance the social-emotional growth of young children, future research might illuminate second-order benefits for cognitive development. That is, how does nurturance in one domain of child development, variably culturally situated among

foreign- and native-born parents, spill over to lift the cognitive and linguistic agility of young children?

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Notes

1. Several studies detail the robust social skills and readiness to engage classroom tasks of Latino children as they enter school. Crosnoe (2007) described this pattern for children of Latino immigrants, with some variability in social-emotional status among differing social-class subgroups. Galindo and Fuller (2010) found similarly strong social proficiencies, as reported by kindergarten teachers. De Feyter and Winsler (2009) reported that preschool-aged children of first- and second-generation families lag behind their later-generation peers in cognitive and linguistic skills, but exceed these peers in social-behavioral competencies, drawing on a sample of 2,194 children in Florida.
2. Researchers studying family practices often assume that parents cultivate their children in a concerted and intention-filled manner, attending to their development through engineered, stimulating educational activities. LeVine et al. (1994), however, emphasize that parent-structured forms of learning, or even seeing child development as a process that is purposefully crafted, may vary across cultural and class groups.
3. Field researchers were trained and certified by the National Center of Education Statistics to administer the reduced-form Bayley scales. They achieved interrater reliability for scoring accuracy at 97% or better before conducting home visits.

4. Factor scores were calculated for inclusion in regression models: mother's praise and encouragement of the child to complete the task (Cronbach α = .80), responsiveness when the child is in distress (α = .76), display of warmth and emotional support (α = .79), and verbal specificity and careful instructions by the mother (α = .57).
5. These analogues do not make distributional assumptions; for instance, the survey version of linear regression does not assume normally distributed errors. The survey version of linear regression gives the same regression coefficient estimates as a weighted least-squares estimation using the sampling weights, but we used Taylor series linearization to estimate standard errors and construct confidence intervals (Lohr, 1999) STET.
6. For 9-month peers with a shared Bayley's score (at 9 months), one standard deviation above the population mean (*t* score of 60), the estimated gap was −8.46, or fully 0.84 standard deviation ($p < .001$).
7. We again matched Mexican American and White children to take into account developmental variation prior to 9 months, guarding against simple regression to the mean. The age-adjusted gap equaled −7.1 points or 0.71 standard deviation ($p < .001$). We then fit a linear model predicting 48-month literacy *t* scores from ethnic membership, age-adjusted 9-month Bayley score, and child's age at the 48-month assessment. These exploratory growth analyses are available from the authors.

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