"Enclave Effect or Selection Effect? Early Academic Performance of Mexican Children in Enclave Neighborhoods"

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Abstract

In this paper, we examine kindergarten through eighth grade reading and mathematics achievement trajectories among children of Mexican descent. By estimating mixed-effects growth curve models, we show that first- and second-generation children and those who live in Mexican enclave neighborhoods begin school with lower levels of reading and mathematics achievement than third-plus generation children and children living in non-enclave neighborhoods. However, this initial disadvantage is largely explained by enclave residents' lower average family SES. Children of immigrant mothers who live in non-enclave neighborhoods and third-plus generation enclave residents are also disadvantaged with respect to their reading ability gains over the elementary and middle school years. However, children of immigrant mothers who live in enclave communities do not demonstrate this deleterious pattern.

Mexican Americans' Educational Outcomes

Recent research highlights the particular educational disadvantages facing children in Mexican-American families. An achievement gap between Mexican children and non-Hispanic whites has been demonstrated as early as 24 months of age (Fuller et al. 2009), as well as at kindergarten entry (Hibel 2009), and over the span of the primary and secondary school years (Boardman et al. 2005; Downey et al. 2005; Fryer and Levitt 2004). The success of the American education system over the coming years will be shaped considerably by the success or failure of Mexican Americans, who constitute the largest and fastest-growing segment of the immigrant population. Of particular concern is research pointing to the persistent (and by some accounts, increasing) residential isolation of Latinos in general, in Mexican Americans in particular (Logan et al. 2004; Iceland 2009). Developing a thorough understanding of the causes of Mexican student underperformance should therefore be a priority for future demographic and educational research. To this end, we examine the relationship between ethnic enclave residence and early academic achievement among Mexican children of immigrant and U.S.-born mothers.

Ethnic Enclave Effects

There exist two bodies of largely conflicting work regarding the impact of neighborhood ethnic concentration on children's social and developmental outcomes. One of these perspectives, eloquently described by Jencks and Mayer (1990), Wilson (1987), and, more recently, Sharkey and Elwert (2009) links residential isolation and poverty concentration to poor outcomes (e.g., high levels of high school dropout, weak school commitment). The other, generally countervailing viewpoint on community ethnic concentration is typified by the work of Sampson and colleagues (e.g., Sampson, Morenoff, and Earls 1999). This body of literature stresses positive effects of community ethnic concentration, primarily operating through reduced social disorganization and increased collective efficacy at the community

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level. In related work, immigration scholars have generally emphasized social capital's positive transformative capacity within immigrant enclave communities, although the strength and direction of this enclave effect varies across immigrant groups (e.g., Pong and Hao 2007).

Data and Methods

Our analytic sample consists of approximately[3] 1,500 ethnic Mexican children who participated in the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K). The ECLS-K followed these children from kindergarten entry through the conclusion of their eighth grade years, and we analyze their IRT-scaled reading and mathematics standardized test scores across this time span. Children's national origin group affiliation was provided by their primary caregivers, and we include in our analysis all children whose caregivers identified them as Mexican. We use mothers' country of birth as a measure of children's immigrant generational status, yielding a dichotomous indicator of first/second generation (i.e., foreign-born mother) or third-plus generation (i.e., U.S.-born mother). In addition to information included in the ECLS-K, we draw on spatial data from the 2000 U.S. Census to identify Mexican ethnic enclaves at the census tract level. We operationalize enclaves in two ways: 1) census tracts in which at least 25% of the residents are of Mexican origin or 2) tracts that are spatially contiguous to one of the aforementioned tracts and contain a population that is at least 15% Mexican origin.

We estimate a series of mixed-effects growth curve models examining the initial status and rate of change for students' reading and mathematics test scores across the nine-year span of kindergarten entry through eighth grade completion. In their simplest form, these models can be expressed as concurrent sub-models: a level-1 submodel,

$$Y_{ijk} = \pi_{0j} + \pi_{1i}(\text{TIME}_{ij}) + \pi_{2i}(\text{TIME}^2_{ij}) + \varepsilon_{ij}$$

where Y_{ijk} represents the outcome of interest (in this case, achievement test score) for child *i,* in school *k,* at time *j* expressed as a quadratic function of the child-specific time of assessment. Deviations from this trajectory are captured by the random error term, $\varepsilon_{ij.}$. The level-1 sub-model can also be expanded to incorporate time-varying covariates (e.g., residential census tract).

The level-2 submodel models the extent to which the level-1 parameters vary as a function of time-invariant, person-specific characteristics (i.e., fixed effects) and their associated random effects. The level-2 submodel can be expressed as

$$\pi_{0j} = \beta_{00} + \beta_{01} X_i + r_{0i}$$
$$\pi_{1i} = \beta_{10} + \beta_{11} X_i + r_{1i}$$
$$\pi_{2i} = \beta_{20} + \beta_{21} X_i + r_{2i}$$

In this example of the level-2 submodel, each child's intercept, $\pi_{0j,}$ as well as both growth parameters, π_{1i} and π_{2i}, are expressed as functions of a population-average intercept plus a slope parameter ($\beta_{01,} \beta_{11,}$ and β_{21}) associated with a child-level covariate. Each equation also contains a person-specific residual, $r_{i,}$ that captures individual variation around the population average for each estimated level-1 parameter.

[3] Disclosure safeguards established by the National Center for Education Statistics require that exact sample sizes not be reported

Preliminary Results

Tables 1 and 2 present results from the fixed-effects portions of the growth curve models. Model 1 establishes the baseline growth rate while estimating a conditional intercept that varies as a function of children's immigrant generational status and enclave residence. The positive "Yearly Change" and negative "Yearly Change^2" coefficients yield a positive concave curve in which children's achievement is predicted to grow most rapidly over the early school years and begin leveling off toward the end of study period. In both domains of achievement, Model 1 predicts that children with Mexican-born mothers and those who live in ethnic enclave neighborhoods will demonstrate significantly lower scores than children of U.S.-born mothers and those who live outside an enclave community.

Model 2 allows children's growth rates to vary by generational status and enclave residence. Neither covariate is significantly associated with reading achievement growth. First and second generation Mexican children are predicted to gain mathematics skills more slowly than their third generation coethnic peers, however.

Model 3 incorporates the ECLS-K's categorical family SES indicator as a predictor of children's initial status and achievement growth rates, as well as an interaction term estimating the moderating effects of enclave residence on the generational status effect on academic achievement. With the addition of these measures to the model, enclave residence ceases to be a significant predictor of children's initial academic achievement. Thus, the enclave "effect" on reading and mathematics school readiness appears to result from selection bias, as lower SES (and correspondingly lower achieving) Mexican students are more likely to live in ethnic enclave neighborhoods than those from higher-SES families. Generational status also ceases to predict initial reading achievement in Model 3, though it remains significantly associated with lower initial mathematics achievement. Slope coefficients for reading achievement reveal that, net of family SES, students who are *either* enclave residents *or* children of immigrant mothers demonstrate flatter predicted growth trajectories than their counterparts. However, the coefficient for the interaction between generational status and enclave residence suggests that children who are *both* first/second generation *and* enclave residents do not experience these negative effects. (The additive effects of the immigrant mother, enclave resident, and interaction term coefficients effectively cancel one another out).

Ongoing Research Directions

The results presented in this extended abstract represent the initial stages of our ongoing research agenda investigating the contextual effects of enclave residence on Mexican-American children's cognitive and socioemotional development over the elementary and middle school years. These early findings promise to shape our statistical model's elaboration and the specification of additional research questions. Future avenues include bringing additional comparison groups into the analysis, incorporating additional neighborhood- and school-level mediators in the models, and evaluating alternative spatial measures of neighborhood.

Table 1.

Fixed-Effects Coefficients from Mixed-Effects Models of K-8 Reading Ability Growth

		Model 1	Model 2	Model 3
Immigrant Mother	Initial Status	-7.15***	-7.02***	NS
		(0.62)	(0.79)	
	Yearly Change	---	NS	-1.53*
				(0.74)
	Yearly Change^2	---	NS	0.16*
				(0.08)
Enclave Resident	Initial Status	-2.98***	-2.70**	NS
		(0.62)	(0.80)	
	Yearly Change	---	NS	-1.26*
				(0.57)
	Yearly Change^2	---	NS	NS
Immigrant x Enclave Res.	Initial Status	---	---	-4.46**
				(1.65)
	Yearly Change	---	---	2.60**
				(0.87)
	Yearly Change^2	---	---	-0.26**
				(0.09)
Family SES (Quintile)	Initial Status	---	---	3.64***
				(0.59)
	Yearly Change	---	---	NS
	Yearly Change^2	---	---	NS
Constant	Initial Status	15.35***	15.14***	14.32***
		(-0.58)	(0.67)	(0.72)
	Yearly Change	24.96***	25.12***	25.65***
		(0.20)	(0.36)	(0.42)
	Yearly Change^2	-0.94***	-0.89***	-0.94***
		(0.02)	(0.04)	(0.05)

****p<.001, **p<.01, *p<.05 (Two-tailed tests)*

Table 2.

Fixed-Effects Coefficients from Mixed-Effects Models of K-8 Mathematics Ability Growth

		Model 1	Model 2	Model 3
Immigrant Mother	Initial Status	-3.42***	-2.62***	-1.88*
		(0.39)	(0.47)	(0.86)
	Yearly Change	---	-0.90**	NS
			(0.30)	
	Yearly Change^2	---	0.08**	NS
			(0.03)	
Enclave Resident	Initial Status	-1.47***	-1.07*	NS
		(0.41)	(0.51)	
	Yearly Change	---	NS	NS
	Yearly Change^2	---	NS	NS
Immigrant x Enclave Res.	Initial Status	---	---	NS
	Yearly Change	---	---	NS
	Yearly Change^2	---	---	Ns
Family SES (Quintile)	Initial Status	---	---	2.26***
				(0.36)
	Yearly Change	---	---	NS
	Yearly Change^2	---	---	NS
Constant	Initial Status	13.42***	12.66***	12.87***
		(0.37)	(0.45)	(0.51)
	Yearly Change	18.10***	19.00***	18.92***
		(0.14)	(0.29)	(0.34)
	Yearly Change^2	-0.49***	-0.54***	-0.54***
		(0.01)	(0.03)	(0.03)

****p<.001, **p<.01, *p<.05 (Two-tailed tests)*

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