Non-Cognitive Skill Growth of Latino Immigrants' Children in Elementary School

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Recent research has illuminated the relationship between noncognitive skills, which include traits and skills such as effort, motivation, ability to concentrate, locus of control, and social skills, and key indicators of child and adult well-being (Farkas 2003). For example, the Perry Preschool Program experiment improved later educational achievement of participants primarily by fostering academic motivation and more positive behaviors, rather than bolstering their cognitive skills (Heckman and Kautz 2012). Noncognitive skills are related to adult health outcomes both because they affect educational attainment, a key predictor of health disparities, and because of their direct relationships with health behaviors (Heckman 2007). The relative contributions of cognitive skills (traditionally measured by IQ tests or other proxies meant to capture developed intellectual ability) and noncognitive skills to health and educational outcomes are the subject of several recent research papers (Duckworth and Seligman 2005; Heckman, Stixrud and Urzua 2006). In addition, a growing body of research investigates the contribution of each skill set to disparities by socioeconomic status, race, and other characteristics (Hall and Farkas 2011; Hsin and Xie 2012). The contribution of noncognitive skills to explaining gaps between immigrant and native students, however, has not been studied.

Children of Latin American immigrants now comprise nearly 14% of American children under 18, and this share continues to grow (Fry and Passel 2009). The health and educational prospects of these children are thus of substantial public policy concern. The educational achievement of Latino children of immigrants, however, lags behind that of the native population. Previous research has shown that Latino children of immigrants differ from native children at school entry in terms of both cognitive skills and noncognitive skills. There is mixed evidence on noncognitive skills among Latino children of immigrants relative to native comparison groups. On one hand, previous research has found Latino immigrants' children have high levels of emotional well-being and positive behaviors (Crosnoe 2006). On the other hand, certain skills more specific to schooling success, such as attention skills, have been found to be equal or lower for Latino children of immigrants.

This study examines influences on the growth of Latino immigrant children's noncognitive skills during elementary school. We will identify correlates of noncognitive skill development for children of Latino immigrants and compare their predictive power with native comparison groups. Our analysis will address the following questions: 1) What are key factors that differentiate levels of noncognitive skill *among* Latino immigrants' children, such as home language use, child's foreign vs. U.S. birth, Latino concentration in the child's school, and specific Latino ethnicity? 2) Do early childcare experiences, parenting, and school characteristics a) predict noncognitive skill formation for Latino immigrants' children? b) predict noncognitive skill development equally well for Latino immigrants' and natives' children?

<u>Predictors of Noncognitive Skills</u>

Both parenting and early childhood education and care experiences have been shown by previous research to influence children's noncognitive skill development. Cunha and Heckman (2008) show that parents' education-related parenting practices during elementary school, such as enrolling children in extracurricular activities and providing educational outings, are related to the development of positive behavioral skills. Similarly, the "concerted cultivation" practiced by the middle-class families studied by Lareau (2011) helped children develop social and emotional skills that facilitated educational success. However, previous research has documented that Latino families engage in lower levels of concerted cultivation than non-Hispanic white families

(Cheadle and Amato 2011). This difference may result in part from the special difficulty faced by undocumented parents in accessing resources for their children, such as library cards or transportation to activities (Yoshikawa 2011). Testing whether this difference impedes the development of noncognitive skills for Latino children of immigrants is one contribution of the proposed study.

In addition to documented differences in parental practices between Latino immigrant and native families, research has suggested factors that differentiate children and families within the Latino immigrant population. For example, Cheadle and Amato (2011) found that families who did not speak English at home engaged in lower levels of education-related parenting practices than English-speaking families. Other factors that may create within-group differences among Latino immigrants include length of time since migration, parental English fluency, Latino concentration in the school, and specific Latino ethnicity, which have been shown by previous research to correlate with health behaviors and educational outcomes (Greenman and Xie 2008). These factors have yet to be studied in relation to children's development of noncognitive skills.

Children's academic readiness for school has been shown to be affected by early childcare experiences, with children who experienced center-based care or preschool being more academically prepared than children in other forms of care (Crosnoe 2006; Magnuson and Waldfogel 2005). Hispanic children (Magnuson and Waldfogel 2005) and children of immigrants (Magnuson, Lahaie and Waldfogel 2006) have considerably lower rates of center-based childcare enrollment than non-Hispanic whites or blacks, suggesting that raising enrollment in high-quality programs may be a promising way to reduce gaps in academic readiness for Latino immigrants' children. However, enrollment in childcare has also been related to modestly higher levels of behavior problems in elementary school (NICHD 2003). Children of Latino immigrants tend to do well on measures of emotional and behavioral aspects of school functioning, and this may be related, in part, to higher levels of parent-only care prior to school entry (Crosnoe 2006). Thus, increasing preschool enrollment for Latino immigrants' children has the potential to both enhance their cognitive skills and hurt their behavioral well-being, an area which is currently a strength in this population.

Finally, the elementary school contexts of Latino immigrants' children differ from those of natives' children. The schools attended by Latino immigrants' children tend to be larger, have a higher proportion of minority students and poor students, and be located in less safe communities than those attended by native whites' children (Crosnoe 2006). Such disadvantageous school characteristics are known to be related to lower academic achievement. It is reasonable to suppose that such differences may also contribute to the development of noncognitive skills during the elementary school years, but there has been little empirical research testing this supposition. This project will test the relationship between school characteristics and the development of noncognitive skills for Latino immigrants' children.

Current Investigation

This project extends research on noncognitive skills to an understudied but important population, children of Latino immigrants. Unlike most previous research on noncognitive skills, this project examines multiple aspects of noncognitive skills and compares results across different dimensions. Examining multiple dimensions is especially important when studying children of Latino immigrants because past research and theory suggests that this group may be advantaged in some types of noncognitive skills but disadvantaged in others. Failing to consider multiple types of noncognitive skill is therefore likely to mischaracterize their role in educational achievement for this group. The project takes a longitudinal approach to characterizing group differences in noncognitive skills, measuring and contrasting them at

multiple time points between Kindergarten and 8th grade. This is key because noncognitive skills grow faster during certain development periods than others, so any measurement at a single time point may not give a full picture of group differences in noncognitive skills. Finally, the project gives a more complete portrayal of noncognitive skills among children of Latino immigrants by comparing them to multiple reference groups, in contrast to much research that chooses a single reference group (such as non-Hispanic whites).

Data

The ECLS-K, sponsored by the U.S. Department of Education, National Center for Education Statistics, selected a nationally representative sample of kindergartners in fall 1998, and has followed these children through eighth grade. The ECLS-K sample is a stratified, multistage probability sample, which contains repeated assessments of student performance as well as measurements of family context and socioeconomic background collected during parent interviews (National Center for Education Statistics, 2002). Data were collected in grades K, 1, 3, 5 and 8. This project utilizes data from interviews conducted with parents and teachers in all grades and from interviews with children themselves in grades 3, 5 and 8. Multiple measurements of noncognitive skills during the elementary school years allow us to take a longitudinal approach to investigating the development of noncognitive skills and inter-group differences therein. The total longitudinal sample size is 9,650, including 650 children of Latino immigrants (reported numbers are rounded to the nearest 50 to comply with ECLS-K confidentiality procedures). We will use multiple imputation to handle cases with missing values on any of the variables used in the analysis. We will conduct sensitivity analyses to assess whether our results differ when using multiple imputation in comparison to other strategies for handling missing data, such regression-adjusted mean substitution and listwise deletion.

Table 1. Study Variables and ECLS-K Measures

Variable	ECLS-K Measure
Noncognitive skills	Our measures of noncognitive skills are derived from several subscales created by ECLS-K based on the Social Ratings Scale (SRS), a teacher-reported rating of children's skills and behaviors in grades K-5. These measures include 1) *Approaches to learning* [attentiveness, task persistence, eagerness to learn, learning independence, flexibility, and organization]; 2) Internalizing behaviors [anxiety, loneliness, low self-esteem and sadness]; 3) Externalizing behaviors [argues with others, fights with others, angers easily, acts impulsively, disruptive]; and 4) Self-control. For internalizing behaviors, we also have a measure based on student-reported Self-Description Questionnaire-I, available in grades 3, 5 and 8.
Cognitive skills	We use scores on standardized tests administered by ECLS-K as a proxy for developed cognitive ability at each grade level. We use the scaled item response theory (IRT) scores for both reading and math.
Academic achievement	We use the Academic Rating Scales (ARS) in math and reading as measures of academic achievement. Teachers rated the children's abilities in each subject as: not yet, beginning, in progress, intermediate, and proficient. The scores are converted into a numerical scale by ECLS-K.
Group definitions	Children of Latino immigrants are defined as children whose mother was born in Latin America. The three native comparison groups are defined as non-Hispanic white, non-Hispanic black, and Hispanic children whose mothers were born in the U.S. Parent-reported information on the child's race, child's Hispanic ethnicity, and mother's country of birth is used to defined these groups.
Parenting practices	We create 2 measures based on parents' responses to questions regarding child and parent time use. Each subset is made into a scale by summing the items and taking the z-score: *Parents' organization of child's non-school time* is based on 8 measures of children's participation in extracurricular activities such as music, athletics, and clubs (alpha= .52). *Parents' activities with the child* are measured with the parent's frequency of engaging in 11 activities such as activities: Helping with homework, telling stories, singing songs, teaching words or numbers, and reading books (alpha=.73).
Early Childhood Education and Care (ECEC)	Parents are asked about child care arrangements and preschool attendance in the year prior to Kindergarten. We will create a categorical variable indicating whether the child was in parent-only care, preschool (including Head Start), daycare, or other care arrangement. We will also use information on hours per week spent in care.
Immigration-related	Specific Latino ethnicity for children of Latino immigrants will be ascertained from the mother's country of birth. Latino concentration in the child's school will be estimated by pooling information on race/ethnicity

characteristics	across all sampled students in a given school. ECLS-K also includes information on language spoken at home, an indicator of whether the interview language was English, and whether the child was foreign- or U.S.-born.
School characteristics	All school characteristics are measured in the 1st grade, which contains more detail than later grades. *School size* is taken from ECLS-K's principle interview and is measured on a 5-point scale ranging from 1 (<150 students) to 5 (>750 students). *Student percent minority* and *student percent in poverty* will be calculated by aggregating information from ECLS-K respondents.
Child and family socio-demographic characteristics	1) Maternal age at child's birth; 2) Family structure (single-parent, stepparent, 2-biological parent, other); 3) Region; 4) Sex; 5) Maternal education; 6) Family income; 7) Household food insecurity; 8) Urbanicity.

Methods

Analytic strategy for Question 1: The sample will be restricted to children of Latino immigrants. Growth curve models will be estimated treating, in turn, self-control, externalizing behaviors, internalizing behaviors, and approaches to learning as the dependent variable.. Key predictors of both intercepts and slopes will be dummy variables indicating use of non-English language at home, whether the child was born in the U.S., Latino concentration in the child's school, and specific Latino ethnicity. The child and family sociodemographic characteristics listed in *Measures* will be included as control variables.

Analytic strategy for Question 2a: The sample will be restricted to children of Latino immigrants. In addition to the factors included under Aim 2a, *parenting practices*, *early childhood education and care experiences* and *school characteristics* will be included in the models.

Analytic strategy for Question 2b: The sample will include Latino, white and black children of native parentage in addition to children of Latino immigrants. Each native comparison group will be represented in the models with a separate dummy variable, with children of Latino immigrants as the omitted category. Using growth curve models, effects of *parenting practices*, *early childhood education and care experiences* and *school characteristics* on both slopes and intercepts will be estimated. These three factors will also be interacted with the dummy variables representing each native comparison group, allowing us to gauge whether the statistical effects of predictors of noncognitive skills differ for children of Latino immigrants relative to each native comparison group. The child and family sociodemographic characteristics listed in *Measures* will be included as control variables.

Preliminary Analysis

In preliminary analyses (Table 2), we find that during the early years of schooling (kindergarten, 1st, and 3rd grades) children of Latino immigrants appear to have lower scores than white children and higher scores than black children on indicators of approaches to learning and self-control, and higher scores than white children on measures of internalizing and externalizing behavior. However, once we control for child and family characteristics, children of Latino immigrants are not significantly different than children of native-born white parents during these early years of schooling (Table 3). Moreover, by 5th grade children of Latino immigrants have closed much of the gap with native white children in approaches to learning and eliminated the gaps in externalizing and internalizing behaviors, indicating that there may be differences in the development of noncognitive skills for children of Latino immigrants. When comparing Latino children of immigrants to Latino children of natives, most differences between these groups do not emerge until 5th grade. By fifth grade, we find that children of native-born Latinos have lower scores on approaches to learning and self-control, and higher scores on measures of

externalizing and internalizing than children of foreign-born Latinos, controlling for child and family characteristics.

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Table 2. Preliminary analysis of child race/ethnicity/nativity and non-cognitive outcomes, by grade level.

	Kindergarten											
	Approaches to learning			Self control			Externalizing			Internalizing		
	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p
ref=Children of Latino immigrants												
Children of native Blacks	-0.144	0.025	0.000	-0.166	0.024	0.000	0.194	0.023	0.000	0.029	0.019	0.120
Children of native Whites	0.130	0.015	0.000	0.117	0.015	0.000	-0.057	0.014	0.000	-0.037	0.012	0.001
Children of native Latinos	-0.019	0.023	0.411	0.043	0.023	0.063	0.000	0.024	0.989	0.036	0.019	0.057
Constant	3.069	0.013	0.000	3.135	0.012	0.000	1.668	0.011	0.000	1.574	0.009	0.000

	1st Grade											
	Approaches to learning			Self control			Externalizing			Internalizing		
	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p
ref=Children of Latino immigrants												
Children of native Blacks	-0.211	0.026	0.000	-0.184	0.026	0.000	0.220	0.023	0.000	0.051	0.019	0.009
Children of native Whites	0.095	0.015	0.000	0.084	0.014	0.000	-0.044	0.014	0.001	-0.026	0.011	0.021
Children of native Latinos	-0.011	0.026	0.683	0.007	0.024	0.765	0.004	0.023	0.870	0.023	0.021	0.263
Constant	3.010	0.012	0.000	3.145	0.012	0.000	1.659	0.011	0.000	1.600	0.009	0.000

	3rd Grade											
	Approaches to learning			Self control			Externalizing			Internalizing		
	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p
ref=Children of Latino immigrants												
Children of native Blacks	-0.246	0.028	0.000	-0.270	0.028	0.000	0.295	0.027	0.000	0.033	0.023	0.155
Children of native Whites	0.085	0.017	0.000	0.061	0.016	0.000	-0.036	0.015	0.017	-0.021	0.013	0.111
Children of native Latinos	-0.037	0.028	0.190	-0.030	0.026	0.254	0.062	0.025	0.013	0.007	0.023	0.765
Constant	3.037	0.014	0.000	3.197	0.013	0.000	1.675	0.012	0.000	1.634	0.011	0.000

	5th grade											
	Approaches to learning			Self control			Externalizing			Internalizing		
	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p	Coef	Std Error	p
ref=Children of Latino immigrants												
Children of native Blacks	-0.233	0.032	0.000	-0.263	0.031	0.000	0.262	0.028	0.000	0.027	0.022	0.226
Children of native Whites	0.071	0.017	0.000	0.039	0.016	0.015	-0.021	0.014	0.136	0.000	0.013	0.971
Children of native Latinos	-0.069	0.029	0.017	-0.045	0.026	0.085	0.077	0.027	0.005	0.049	0.024	0.039
Constant	3.057	0.014	0.000	3.239	0.013	0.000	1.623	0.012	0.000	1.629	0.010	0.000

Table 3. Regression analysis for selected non-cognitive outcomes, by grade level

Approaches to learning [a]												
	Kindergarten			1st grade			3rd grade			5th grade		
ref=Children of Latino immigrants	Coef.	Std. Err	p	Coef.	Std. Err	p	Coef.	Std. Err	p	Coef.	Std. Err	p
Children of native Blacks	-0.114	0.029	***	-0.170	0.030	***	-0.168	0.031	***	-0.181	0.037	***
Children of native Whites	0.019	0.018		-0.021	0.019		-0.021	0.021		-0.046	0.020	*
Children of native Latinos	-0.055	0.026	*	-0.043	0.029		-0.041	0.029		-0.115	0.031	***

Externalizing [a]												
	Kindergarten			1st grade			3rd grade			5th grade		
ref=Children of Latino immigrants	Coef.	Std. Err	p	Coef.	Std. Err	p	Coef.	Std. Err	p	Coef.	Std. Err	p
Children of native Blacks	0.168	0.026	***	0.164	0.027	***	0.238	0.031	***	0.239	0.034	***
Children of native Whites	0.001	0.016		0.023	0.017		0.036	0.019		0.051	0.016	**
Children of native Latinos	0.026	0.027		0.016	0.027		0.084	0.028	**	0.086	0.028	**

[a] Models include controls for: maternal age, food security, urbanicity, region, family structure, maternal education, household income, gender