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Spanish-speaking Mexican-American Families' Involvement in School-based Activities and their Children's Literacy: The Implications of Having Teachers who Speak Spanish and English

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Abstract

For a sample of low-income, Spanish-speaking Mexican-American families ($n = 72$), we investigated associations between family involvement in school-based activities and children's literacy in their preferred language (English or Spanish) during early elementary school. We gave special attention to the potential moderating role of teacher fluency in Spanish. Between kindergarten and third grade, family involvement in school-based activities increased for children who displayed early literacy problems. The rate of increase was greater for children who consistently had bilingual teachers than for children who did not. In turn, increased family involvement predicted better literacy skills at third grade, particularly for children who struggled early. We discuss these results in light of recent recommendations to increase the number of elementary school teachers who are fluent in Spanish and English.

Keywords

Family involvement; bilingual teachers; Mexican-American students

The demographic landscape of schools in the United States is becoming increasingly linguistically and culturally diverse (Hernandez, Takanishi, & Marotz, 2009; Suarez-Orozco, Suarez-Orozco, & Todorova, 2008). Indeed, the number of English language learners is increasing faster than any other portion of the pre-K to 12 population, and the fastest growing racial group, Latinos, may represent over 50% of the public school population by 2050 (Fry & Gonzales, 2008; Hoffman & Sable, 2006; Kindler, 2002; Planty et al., 2009). Presently, children of Mexican origin account for nearly two-thirds of school-aged Latinos in the U.S. (Dockterman, 2011). The academic success of these students has key

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implications for the nation's social and economic future, but debate is on-going concerning best educational practices for English-language learners (Brisk, 1998; García & Jensen, 2010; Guerrero, 2002; Hernandez et al., 2009; National Research Council, 1997; Suro & Passel, 2003).

Achievement of Mexican-American Children: Early Education and Family Considerations

The schooling of Latino students has become a national priority not only because of their growing numbers but also because, on average, they demonstrate some of the lowest achievement levels in the country (Valencia, 2002). Results from national assessments demonstrate that, as a group, Latino students underperform in reading, mathematics, and science (National Center for Education Statistics, 2004; Planty et al., 2009). Beginning in early elementary school, underachievement is especially pronounced among Latino children whose home language is Spanish (Fry, 2007; García & Jenson, 2010; Reardon & Galindo, 2006). Moreover, Mexican-American students face greater risk for educational underachievement compared with the Latino population, overall (Dockterman, 2011). Part of the explanation for these trends may lie in the converging consequences of high poverty rates among Mexican-American children (particularly those whose parents have limited English skills), home environments with limited resources to cultivate English language skills, and a lack of family experience within the U.S. educational system (Delgado-Gaitan, 2004; Hernandez et al., 2009; Sampson, 2003).

Discussions on best educational practice for Latino students, in general, have focused on early education (pre-K to third grade) as a lever for promoting achievement (e.g., García & Jensen, 2010; García & Miller, 2008). Similarly, for Mexican-American children, in particular, the early elementary school years have been a point of focus (e.g., Crosnoe, 2005). One recommendation of the National Task Force on Early Childhood Education for Hispanics is to increase the number of pre-K to third grade teachers who are fluent in Spanish and English (García & Miller, 2008). For English language learners, bilingual teachers have the advantage of being able to assess literacy skills across languages and, in turn, facilitate the transfer of oral Spanish literacy skills to English (e.g., via modeling). Moreover, through effective communication, Spanish-English bilingual teachers may best be able to recognize and build on the strengths of Spanish-speaking families as a resource for promoting achievement in the classroom (García & Jensen, 2010).

Mexican-American families do, in fact, bring rich cultural strengths to their children's education. Prioritizing familial ties and investments in children is a cultural value (e.g., *familismo*) central to many Mexican-American families, heterogeneity due to factors such as acculturation notwithstanding (Behnke et al., 2008; Marin, 1993; Mindel, 1980). In addition, Latino families tend to value education highly and hold high aspirations for their children (Goldenberg, Gallimore, Reese, & Garnier, 2001; Suarez-Orozco & Suarez-Orozco, 2001; Valencia & Black, 2002). Yet, many questions remain with regard to how schools and Mexican-American families can best partner to take advantage of these cultural strengths and avoid contextual obstacles to children's achievement. The involvement of Mexican-American families in school-based activities is one area where such questions appear particularly persistent.

Family Involvement in School-Based Activities: Exceptional Benefits and Barriers for Mexican-American Families?

As part of national reform efforts, family educational involvement has garnered attention as a mechanism for reducing achievement gaps (National Education Goals Panel, 1999; U.S.

Department of Education, 2005). Although definitions of family educational involvement vary, most researchers agree on at least two general domains: learning activities within the home (e.g., joint reading, help with homework) and activities within the school (e.g., parent-teacher conferences, classroom volunteering). In the present study, we focused on the role that families' school-based activities play in the literacy skills of Mexican-American children whose families' primary language was Spanish. School-based activities consistently demonstrate positive associations with children's achievement, but for language-minority parents, there may be exceptionally large barriers to being involved in the school.

Meta-analyses and recent reviews of the literature indicate that the amount of family involvement in school-based activities is positively associated with child achievement; average effect sizes (r 's) are between approximately .20 and .30, which are larger and more likely to be positive than are effect sizes for home-based involvement (Fan & Chen, 2001; Jeynes, 2005; 2007; Pomerantz, Moorman, & Litwack, 2007). Although the benefits of family involvement in education are likely, in part, conveyed directly to children (e.g., modeling learning skills), indirect mechanisms (e.g., the mediating role of attitudes toward school) are also critical when considering the implications of school-based activities for children's achievement (Grolnick & Kurowski, 1999; Hoover-Dempsey & Sandler, 1995).

Hoover-Dempsey and Sandler (1995) have argued that family involvement within schools conveys to children that education is important, which fosters positive feelings and attitudes toward school and, in turn, fosters academic motivation (also, see Pomerantz et al., 2007). Indeed, there is empirical evidence that increases in family school-based activities predict improvements in children's feelings about school and, in turn, these improvements in feelings about school predict improvements in literacy performance (Dearing, Kreider, & Weiss, 2008; Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004). Along similar lines, Xu and colleagues (Xu, Kushner Benson, Mudrey-Camino, & Steiner, 2010) demonstrated that children's self-regulation of learning mediated positive associations between school-based involvement and children's literacy achievement.

Family educational involvement in school may be particularly beneficial for children who face exceptional barriers to achievement (Dearing, Kreider, Simpkins, & Weiss, 2006; Dearing & Tang, 2010). If educational involvement promotes learning skills and positive attitudes toward learning, then children who lack these skills and attitudes might benefit the most from involvement. Although most empirical work in this vein has focused on socioeconomic risk (i.e., the added value of involvement for children in the context of poverty and low parent education), we suspect that school-based involvement may be particularly valuable for Mexican-American children for at least two reasons. First, because of poverty, Mexican-American children often face socioeconomic constraints on family investments in children's learning. Second, cultural orientations of many Mexican-American families that jointly emphasize family-centeredness and the value of education are aligned with family involvement in ways that should maximize its positive consequences (Behnke et al., 2008; Crosnoe, 2006). Despite this potential, however, many Mexican-American families also face considerable obstacles to becoming involved in their children's education, particularly in school-based activities.

Most research indicates that Mexican-American families are, on average, less involved in their children's schooling in comparison to other racial and ethnic groups (Crosnoe, 2006; Moreno & Valencia, 2002). Yet, in contrast to previously held misconceptions that this was due to families' low regard for education, a substantial body of evidence indicates that Latino parents, in general, and Mexican-American parents, specifically, value education very highly and strongly desire to have their children succeed in school (Okagaki & Frensch, 1998; Suarez-Orozco & Suarez-Orozco, 1995; Valencia & Black, 2002). The true obstacle

for Mexican-American families may be a confluence of contextual and cultural circumstances that jointly limit opportunities to be involved in their children's school activities and lead families to focus on in-home activities (Hill & Taylor, 2004).

Extending person-environment fit theories, it is reasonable to suspect that match between family strengths and needs, on the one hand, and school opportunities, on the other hand, will be consequential for family educational involvement and, in turn, children's achievement (Eccles et al., 1993). Optimal family-school partnerships for Mexican-American students are likely to occur when there is a match between their family characteristics, culture, and circumstances and their children's school environments. As one example, consider the role of language.

Schools have been urged to communicate with families in their native languages (Center for Applied Linguistics, 1974; Delgado-Gaitan, 2004; Henderson & Mapp, 2002). Such efforts are likely especially useful for Spanish-speaking immigrant families who tend to demonstrate longer native-language preservation across generations than other immigrant groups in the United States (Alba, Logan, Lutz, & Stults, 2002; Crosnoe, 2006; Schmid, 2001). Even so, we suspect that multilingual communication efforts, alone, may not fully remove barriers to school-based involvement if the classroom teacher is monolingual, speaking only English. Family involvement in school-based activities (e.g., volunteering or attending parent-teacher conferences) may be inhibited if family members do not speak English and teachers do not speak Spanish (Finders & Lewis, 1994; Hill & Taylor, 2004; Smith, Stern, & Shatrova, 2008). This potential language barrier to school-based involvement is concerning in light of the disproportionate academic struggles demonstrated by Mexican-American children, particularly those whose home language is Spanish.

The Role of Bilingual Teachers in Promoting the School-Based Involvement of Spanish-Speaking Families

When students are failing, teachers tend to increase their contact and communication efforts with these students' families, often in hopes of soliciting increased educational involvement in school (Chen & Stevenson, 1989; Cooper, Lindsay, & Nye, 2000; Epstein, 1988; Levin et al., 1997). And, there is good evidence that teacher encouragement matters; among low-income families, teacher outreach is a strong predictor of how involved families become in school activities (Green, Walker, Hoover-Dempsey, & Sandler, 2007; Patrikakou & Weissberg, 1998). Moreover, once aware of their children's academic difficulties, families consistently report the desire to increase educational involvement (Cooper et al., 2000; Hoover-Dempsey, Battiato, Walker, Reed, & Jones, 2001; Pomerantz & Eaton, 2001). We propose that this process is best described as an achievement-involvement feedback loop: when students struggle academically, teachers and families may reach out to one another and, in turn, families may increase involvement with the goal of improving achievement.

We also suspect, however, that language barriers may interrupt achievement-involvement feedback loops for families whose primary language is not English. Even if schools reach out to families' in their native languages (e.g., letters, phone calls, or emails in Spanish), the options for school-based involvement are limited if classroom teachers do not speak families' languages. In response to low child achievement, these families may increase their learning investments in the home (e.g., assisting with homework, reading to the child; Hill & Taylor, 2004), but their range of options may be restricted compared with families who can increase investments in the home and school. Furthermore, in many cases, the initiation of an achievement-involvement feedback loop requires that teachers are sensitive to children's academic struggles, and language barriers may interfere with this assessment process (García & Jensen, 2010). We are, however, aware of no studies to date investigating the

supporting, or interrupting, role of bilingual teachers for achievement-involvement feedback systems with language-minority families.

The Present Study

In the present study, we investigated associations between teachers' Spanish-language fluency, family involvement in school-based activities, and children's literacy skills in their preferred language (English or Spanish). We examined these associations from kindergarten through third grade for a sample of low-income Mexican-American children whose families' primary language was Spanish. We were particularly interested in whether teachers who were Spanish-English bilingual versus those not fluent in Spanish altered associations between early achievement problems and later family involvement, and whether there were later achievement consequences as a result. Specifically, we addressed three research questions. First, does low literacy performance at kindergarten more strongly predict increases in school-based involvement between kindergarten and third grade for children who consistently have Spanish-English bilingual teachers than for those who do not? Second, do children with low literacy performance at kindergarten demonstrate greater achievement by third grade if they consistently have bilingual teachers than if they do not? And, third, are differences in achievement explained by rates of family school-based involvement for students with and without Spanish-English bilingual teachers?

We were particularly interested in the early elementary school years, because of the potential for this school transition time to influence children toward positive or negative academic trajectories (Alexander & Entwisle, 1988). It is during kindergarten that elementary school teachers first have the opportunity to recognize academic struggles and reach out to parents for increased involvement. And, by third grade, literacy outcomes predict a range of academic and behavioral problems in the future, as children increasingly rely on their reading skills for learning in all academic disciplines (Snow, Burns, & Griffin, 1998). Moreover, during these early elementary school years, teacher fluency in Spanish and English appears particularly valuable for children from Spanish-speaking homes (García & Miller, 2008). We argue, therefore, that it is imperative to better understand the consequences of kindergarten to third grade classroom context for family educational involvement and, in turn, the achievement of Mexican-American children, especially those who display limited literacy skills early on.

Method

Participants

The sample for the present study included 72 children of low-income, Spanish-speaking families of Mexican-origin who lived in a city in the western United States. These children and families were part of a larger longitudinal study – the School Transitions Study (STS; Harvard Family Research Project, 2011) – focused on children's early schooling experiences. In 1995, children and families in the STS were recruited from three (of 21) sites in an experimental evaluation of an early intervention program, the Comprehensive Child Development Project (CCDP; St. Pierre, Layzer, Goodson, & Bernstein, 1999). The intervention was designed to promote child growth and family self-sufficiency through comprehensive social service delivery for very low income children and families (85% had annual income less than \$10,000 in 1990).

The STS sites were selected to capture three unique demographic representations of poverty: (1) urban, Mexican-American families; (2) urban, African-American families; and (3) rural, White families. Of the 403 children at these three CCDP evaluation sites, 81.6% participated in the STS, beginning at kindergarten. Our study sample was pulled from the urban site

comprised predominantly of Mexican-Americans, of which there were 126 families in total. Of these, we selected the families who self-reported being of Mexican origin and speaking Spanish as their primary language in the home. For our analyses, we used data from four sources: (1) child, parent, and family data collected at child birth as part of the CCDP evaluation; (2) family questionnaires at kindergarten and third grade; (3) teacher questionnaires at kindergarten, first, and third grades; and (4) child literacy assessments at kindergarten and third grade. The STS data were particularly useful because the first three years of the study took place prior to the enactment of legislation that restricted bilingual education, beginning in 1998, in the state from which families were sampled.

Across all variables and observation points, there was a moderate amount of missing data for the sample; 69.6% of values were complete. To examine whether participants with complete data were systematically different from those with missing data, we conducted a series of t -test and χ^2 comparisons. Although power is limited with this small sample, we found no evidence that the assumption of missing at random was violated. There were some small differences between participants with complete data and those with missing data, but none of these differences were statistically significant (e.g., the largest difference observed was that participants with complete school involvement data had somewhat higher kindergarten literacy scores than participants with at least one observation of missing school involvement data, $t = 1.42$, $p = .16$).

We imputed missing values with maximum likelihood estimation using an EM algorithm in STATA 11. This imputation strategy is a recommended alternative to discarding participants or observations, even for missing rates higher than those observed here (Widaman, 2006). In the present study, one advantage of using maximum likelihood estimation compared with other imputation strategies (e.g., multiple imputation via chained equations) was that it allowed us to use the same approach for all of our analytic models.

Measures

Covariates—At child birth, data were collected as part of the CCDP evaluation on demographic and health characteristics, including child gender, child birth weight (low vs. typical), and maternal depressive symptoms (i.e., Center for Epidemiological Studies—Depression Scale; Radloff, 1977). When study children were in kindergarten, household per capita income and years of maternal education were self-reported by families, usually mothers, during home interviews. For reasons of parsimony, maternal education and annual household per capita income were standardized and combined to create a composite socioeconomic status covariate. We also included a dummy variable in all of our analyses for families' CCDP intervention status (control group vs. experimental group). Beyond controlling for potential intervention effects, this set of covariates was included in our analysis to address factors at multiple levels of families' ecological systems that may affect: families' propensities to be involved in education, child literacy, or both. As such, these variables were useful for minimizing potential omitted variable bias.

Family involvement in school-based activities—As part of home interviews, families (in most cases mothers) reported on family involvement in their children's school at kindergarten and at third grade. Specifically, eight items created for the STS (scored dichotomously, yes/no) were used to assess involvement at school during the year (i.e., "Did you attend parent-teacher conferences?", "Did you visit your child's classroom?", "Did you attend any school performances?", "Did you attend any social events at your child's school?", "Did you attend any field trips?", "Did you volunteer in your child's classroom?", "Did you attend meetings, like PTO or PTA?", "Did you attend classroom open houses?"). The eight items were averaged within each year so that involvement scores ranged from zero

to one, indicating the proportion of school involvement activities in which families were involved each year (e.g., a score of .50 indicated that families were involved in four of the eight activities). Although inter-item reliability was not of primary concern for this predictive index – it was designed to capture a cumulative account of varying behaviors and not be reflective indicators of a latent construct (Bradley, 2004) – Cronbach's alpha and item-rest correlations at kindergarten and third grade (i.e., $\alpha > .65$ and $r > .29$) indicated that the items were correlated with one another and the scale, as a whole. In addition, total family involvement levels reported on these composites were correlated at kindergarten and third grade ($r = .54$). In addition, these items have demonstrated associations with literacy achievement in the full STS sample (e.g., Dearing et al., 2006).

Teacher fluency in Spanish—At kindergarten, first, and third grade, teachers in children's regular education classrooms reported on whether they were fluent in Spanish – enough to converse and read – using a yes/no item from a questionnaire on classroom practices/structure (i.e., Are you proficient in the students' language(s) enough to be able to engage in conversation and read children's books?). The majority of children ($n = 63$) had kindergarten teachers who reported being fluent in Spanish. Although only 14 children had teachers at all three grades who reported being fluent, another 19 children had at least one teacher in the early grades (either kindergarten or first grade) as well as a teacher at third grade who reported being fluent in Spanish. Of the remaining children, two had no teachers reporting being fluent in Spanish, 19 had just one teacher between kindergarten and third grade (16 of these at kindergarten or first grade) who reported being fluent, and 18 had teachers in the early grades who reported being fluent, but not at third grade.

Based on these reports, we created a 0/1 dummy variable, by dividing children into two groups: those who consistently had Spanish-speaking teachers ($n = 33$; dummy variable = 1) and those who did not ($n = 39$). We included children in the first group only if they had Spanish-speaking teachers at third grade and at least one of the early grades, kindergarten or first. Across grades, teacher reports of Spanish fluency were correlated with their reports (yes/no) of having bilingual credentials ($r = .46$) and whether they used a mixture of Spanish and English for instruction and other purposes in the classroom or only used English ($r = .61$). At kindergarten, children with Spanish-speaking teachers were also more likely than other children to receive ESL instruction (92.3% vs. 45.5%). By third grade, however, there were no statistically-distinguishable differences between groups, with about 58% of all children receiving ESL services in addition to regular classroom instruction at this later time point.

In the present study, we examined teacher fluency in Spanish as a moderator of (a) the association between child achievement at kindergarten and family school-based involvement and (b) the association between child achievement at kindergarten and third grade. With this in mind, it is worth noting that we had very similar results when we used teacher reports of whether they used a mixture of English and Spanish in their classrooms as the moderating variable. We focused our study on the fluency variable, however, primarily because it provided a more precise indicator of whether Spanish-speaking families could directly communicate, in their home language, with teachers.

Foundational literacy skills: Letter-word recognition—Students' literacy achievement was measured at kindergarten and third grades using the Letter-Word Recognition subscale of the Woodcock-Johnson Psycho-Educational Battery-Revised (Woodcock & Johnson, 1989), a measure that has demonstrated good validity and reliability – for both the English and Spanish versions – in large samples of children in poverty (U.S. Department of Health and Human Services, 2010; Flanagan & Alfonso, 1995; Woodcock & Johnson, 1989). On this subscale, children identify isolated letters and words, and match

words with pictures. Children were tested in their preferred language (English or Spanish), with 27 children assessed in Spanish (25 at kindergarten and two at both kindergarten and third grade). Language of administration was not associated with literacy performance at either time point in zero-order correlations, and was not significant in any of our statistical models if added as a covariate. In addition, assessment language did not significantly moderate any of our predictors of interest.

In this high-risk sample, however, the kindergarten assessment had to be modified because of floor effects. Specifically, more letters and short words were added to the kindergarten assessment to create an adjusted measure with a total of 26 letters on the English version and 30 letters on the Spanish version as well as 26 short words on both versions ($\alpha = .85$). At third grade, group literacy performance was high enough that children were administered the full Letter-Word Recognition subscale (57 items). Literacy achievement scores at both time points indicated the percentage of items answered correctly. The mean percent correct was 0.17 ($SD = .20$) at kindergarten and 0.63 ($SD = .12$) at third grade, with achievement across time points moderately correlated ($r = .27$).

Data Analyses

We used three complementary analysis strategies in the present study: (1) cross-lagged path analysis, (2) random-intercept regression, and (3) OLS regression. The cross-lagged path analyses were estimated in LISREL 8.71 and the regression models were estimated using STATA 11. First, using path analysis, we estimated associations between involvement and literacy, comparing two models: (a) a model in which associations were constrained to be equal for children, regardless of teacher fluency in Spanish; and (b) a model in which the association between kindergarten literacy and third grade involvement was allowed to vary as a function of whether the classroom teacher was Spanish-English bilingual. By comparing these two models, we were able to examine whether low literacy performance at kindergarten was more strongly predictive of high involvement at third grade for children in classrooms with fluent Spanish speakers than for other children. Our ability to estimate this association while controlling for other contemporaneous and lagged associations was a strength of the path models. These models, however, did not provide a direct estimate of change in involvement from kindergarten to third grade, an advantage of our second analytic strategy.

Using random-intercept regression models, we estimated changes in involvement between kindergarten and third grade, adjusting for within-child clustering on these repeated measures (Rabe-Hesketh, Skrondal, & Pickles, 2002; Raudenbush & Bryk, 2002). Specifically, we examined whether low literacy achievement at kindergarten predicted increases in family involvement between kindergarten and third grade and whether this association differed as a function of having a Spanish-English bilingual teacher (e.g., was low achievement most strongly predictive of increased involvement for children with teachers who were fluent in Spanish?).

In our final modeling strategy, we used OLS regression to examine whether third grade achievement differed as a function of teachers' Spanish fluency. In these models, we were particularly interested in whether low achievers at kindergarten had better scores by third grade if they were consistently in classrooms with Spanish-bilingual teachers rather than in classrooms with teachers who were monolingual, English speakers. And, we were interested in whether family involvement levels could help to explain such achievement differences.

Central to the second and third modeling strategies were estimates of moderation (e.g., did teachers' Spanish fluency moderate the association between kindergarten and third grade achievement?). In addition, central to the third modeling strategy were estimates of mediated

moderation (i.e., did family involvement mediate differences in third grade literacy that were associated with low achievement at kindergarten, presence of a Spanish-English bilingual teacher, and the interaction of the two?), for which we followed procedures recommended by Muller, Judd, and Yzerbyt (2005). We mean centered literacy and involvement when we included interaction terms.

Results

In Table 1, we present descriptive statistics for study variables and in Table 2, we present inter-correlations. Children were evenly divided by gender (36 boys; 36 girls), with seven percent having a low birth weight (five children) and 43% having received the CCDP intervention in early childhood. The average maternal depression score, about 13, is on a scale for which 16 is considered a clinical level of symptoms. In addition, families were, on average, very low income with very low levels of maternal education.

For the variables of primary interest, three points are worth noting. First, at both kindergarten and third grade, families were involved, on average, in more than four school activities. Second, although kindergarten literacy scores were, on average, quite low (as a group, children answered only about 17% of items correctly), the variability in scores was relatively large and the percent items answered correctly was markedly higher at third grade (as a group, children answered about 63% of items correctly). Third, at both kindergarten and third grade, family involvement in school-based activities was positively associated with literacy.

Cross-Lagged Path Analyses

As an initial step in our inferential analyses, we estimated a cross-lagged path model, examining contemporaneous and lagged associations between family educational involvement and literacy at kindergarten and third grade. In addition to the involvement and literacy variables, we included child gender, maternal depression, family intervention status, and family SES as covariates (specified as predictors of both involvement levels at kindergarten and literacy achievement at third grade). Note that we were not able to include child birth weight as a covariate in the path models, because this variable was problematic in the multi-group specification (i.e., because none of the children in Spanish-English classrooms were low birth weight, the variance-covariance in this group was 0). Standardized coefficients and fit indices are displayed in Figure 1a, with at least three important results evident.

First, kindergarten involvement was positively associated with kindergarten literacy and third grade involvement was positively associated with third grade literacy; higher involvement at both time points predicted better literacy scores, contemporaneously. Second, lower literacy scores at kindergarten predicted higher family involvement in school-based activities at third grade, evidence consistent with the beginnings of a negative feedback loop. Third, however, the model fit was poor, as indicated by the *RMSEA* value (.10 or larger is considered poor fit).

Given this poor model fit and our interest in the potential moderating effects of a Spanish-English bilingual teacher for associations between achievement and involvement, we re-estimated the path analysis. In the re-estimated model, we used the multi-group option to allow the association between kindergarten achievement and third grade involvement to vary by the presence of a classroom teacher fluent in Spanish (i.e., separate path models were estimated simultaneously for children who consistently had Spanish-English bilingual teachers and those who did not). This multi-group model – displayed in Figure 1b – provided a significant improvement in overall fit compared with the model in which the

association between kindergarten literacy and third grade involvement was constrained to be equal for children in classrooms with Spanish-English bilingual and monolingual English teachers (difference in model $\chi^2(1) = 4.48, p = .03$). This improvement in model fit was due to the fact that the association between kindergarten literacy and third grade involvement significantly differed ($z = -2.07, p = .02$) depending on whether the child had Spanish-English bilingual or monolingual English teachers. For children who consistently had bilingual teachers, low achievement at kindergarten predicted high involvement at third grade ($\beta = -.51, p = .001$); on the other hand, for children who did not experience this consistent bilingual language context, there was no association between kindergarten literacy and later involvement ($\beta = -.05, p = .36$).

Random-Intercept Regression Models: Changes in Family Involvement in School-Based Activities

Building on the path models, we estimated a series of random-intercept regression models that allowed us to examine changes in family involvement from kindergarten to third grade. We specified family educational involvement at kindergarten and third grade as a time-varying outcome, with eight predictors (kindergarten literacy, Spanish-English bilingual teacher, grade in school, child gender and birth weight, maternal depression, family intervention status, and SES). First, we estimated a main-effects specification, followed by a moderation specification in which we added the interaction of kindergarten literacy and Spanish-English bilingual teachers. The results are displayed in Table 3, with three important findings evident.

First, controlling for the significant association between involvement and literacy at kindergarten, kindergarten literacy also negatively predicted changes in involvement from kindergarten to third grade; families of children with the lowest literacy scores increased their involvement by an average of .34 activities ($p = .01$), compared with decreases of .20 activities ($p = .03$) for families of children one standard deviation above the mean on kindergarten literacy.

Second, on average, neither level of involvement at kindergarten nor changes in involvement significantly differed as a function of the main effect of having bilingual teachers. Third, however, there was a significant interaction effect such that the association between kindergarten literacy and changes in involvement varied by whether the classroom teacher was Spanish-English bilingual. We display this interaction in Figure 2. Given a skewed distribution, there were no children 1 standard deviation below the mean on literacy at kindergarten. We make comparisons between the lowest literacy scorers (0% items correct, which was 85% of a standard deviation below the mean and included nearly 32% of the sample) at kindergarten and those that scored 1 standard deviation above the mean (15.28% of the sample scored 1 standard deviation above the mean or higher). Because 1 standard deviation above the mean was nearly identical to the average score for the top third of the sample (.37 vs. .38), our comparisons, in effect, document the difference between the bottom third and the top third of the sample on kindergarten literacy.

Families whose children had low literacy scores at kindergarten, but consistently attended classrooms with Spanish-English bilingual teachers, displayed significant increases in involvement between kindergarten and third grade ($b = .061, p = .01$); on average, these families increased their involvement by more than 1.46 school activities. The other families of children with low literacy scores at kindergarten also displayed increases in involvement ($b = .026, p = .05$), but at less than half the rate of those with bilingual teachers (about .62 additional activities). Unexpectedly, families of high achievers at kindergarten displayed declines in involvement if children consistently had bilingual teachers ($b = -.039, p = .01$; a

reduction of .94 activities), but no changes if children did not consistently have bilingual teachers ($b = -.003$, $p = .84$).

OLS Regression Models for Third Grade Literacy: Moderation and Mediated Moderation

As a final step in our analyses, we estimated OLS models examining whether: (1) low achievers at kindergarten had better literacy scores by third grade if they were consistently in classrooms with fluent Spanish speakers than if they were not (i.e., did teachers' Spanish fluency moderate the association between kindergarten and third grade literacy?) and (2) whether any such difference in third grade achievement could be explained by differences in the involvement levels of families of low achievers with Spanish-English bilingual versus monolingual English teachers (i.e., did family involvement mediate any moderating effects of teachers' Spanish fluency for third grade literacy?). To do so, we estimated three OLS models, the results of which are displayed in Table 4.

In the first OLS model, third grade literacy is regressed on study covariates, the main effects of kindergarten literacy and consistently having bilingual teachers, and the interaction of kindergarten literacy $\times$ bilingual teachers. The result of primary interest is the significant interaction between kindergarten literacy and having Spanish-English bilingual teachers, which is displayed in Figure 3. Kindergarten literacy achievement was most strongly predictive of third grade literacy scores for children who did not consistently have Spanish-English bilingual teachers, primarily because low achievers at kindergarten made greater gains in achievement if they consistently had bilingual teachers. Indeed, at third grade, children who scored the lowest on literacy at kindergarten, but who were regularly in classrooms with fluent Spanish-speaking teachers: (a) significantly outperformed low kindergarten scorers who were not regularly with fluent Spanish-speaking teachers ($d = .60$, $p = .02$) and (b) displayed performance levels that were statistically indistinguishable from children with high literacy scores at kindergarten ($p = .21$ and $p = .20$).

In the second and third OLS models, we examined whether family involvement mediated the moderation demonstrated in the first OLS model, following recommendations by Muller and colleagues (Muller et al., 2005). Specifically, in the second model, family involvement at third grade was regressed on the study covariates, kindergarten literacy, teachers' Spanish fluency, and the interaction of kindergarten literacy by teachers' Spanish fluency. In this second model, we also controlled for kindergarten involvement. In the third model, literacy achievement at third grade was regressed on the predictors in our first OLS model, plus family involvement at third grade and its interaction with kindergarten literacy. The criteria for demonstrating mediated moderation included a reduction in the size of the kindergarten literacy by teachers' Spanish fluency interaction effect in Model 3, when compared with this same interaction effect in Model 1 and evidence that: (1) having Spanish-English bilingual teachers significantly moderated the association between kindergarten literacy and third grade family involvement in Model 2 and (2) third grade family involvement significantly predicted third grade literacy in Model 3 (Muller et al., 2005).

As can be seen in Table 4, the size of the coefficient for the interaction of kindergarten literacy by Spanish-English bilingual teachers dropped from $-.30$ to $-.20$ when comparing Models 1 and 3, and this parameter was no longer statistically significant in the latter model. In Model 2, the interaction of these two variables also significantly predicted family involvement at third grade; consistent with our random-effects model, involvement increases between kindergarten and third grade were greatest for low kindergarten achievers if they were consistently with Spanish-English bilingual teachers. In Model 3, the main effect of family involvement was also significant such that high levels of involvement at third grade predicted higher literacy scores. Moreover, this relation was strongest for children with the

lowest kindergarten literacy, as indicated by the significant interaction of kindergarten literacy and family involvement.

The simple slopes and region of significance (shaded box) for the interaction of kindergarten literacy by third-grade family involvement are displayed in Figure 4. Although family involvement at third grade was not significantly associated with third grade literacy scores for children with relatively high achievement at kindergarten, a 1 *SD* increase in involvement (i.e., an additional 1.60 school involvement activities) predicted 47% of a *SD* increase in third grade literacy scores ($b = .28, p = .002$) for those with relatively low achievement at kindergarten. In fact, as indicated by the region of significant differences between low and high kindergarten scorers, third grade literacy scores were similarly high (i.e., statistically indistinguishable) for children with low versus high kindergarten performance, if their families were involved in 5.71 or more school involvement activities (i.e., an involvement level that was 40% of a *SD* above the mean or greater).

Taken together, these results indicated that the relatively high third-grade achievement of low kindergarten performers who regularly had teachers fluent in Spanish was explained, at least in part, by families of these children demonstrating relatively high involvement at third grade and, in turn, this high involvement having an exceptionally strong association with third grade literacy for children with initially low literacy performance. It is also worth noting that mediated moderation was again evident – the criteria that the interaction term is significant in Model 2 and the main effect of the mediator is significant in Model 3 were met – if we substituted the interaction of family involvement by classroom context in Model 3 for the interaction of involvement by kindergarten literacy; the former, however, was not statistically significant. That is, when parents were involved, the association between family involvement in school-based activities and third grade literacy was equally strong and did not vary depending on whether students had Spanish-English bilingual or monolingual English teachers.

Discussion

In the context of continuing debate on how to educate an increasingly linguistically-diverse population in the United States, strengthening family-school partnerships is one empirically-supported strategy championed by policy decision makers for narrowing achievement gaps (U.S. Department of Education, 2005). Best practice for family-school partnerships involves joint decision-making within the school, where teachers and families can collaborate to identify and respond to student strengths and weaknesses in a dynamic fashion (Dunst, Johanson, Rounds, Trivette, & Hamby, 1992; Sheridan & Kratochwill, 2007). Ideally, for example, academic struggles should trigger increasing collaboration between teachers and families to lever attitudes and skills toward success (Pomerantz et al., 2007).

Our results, however, indicate that teachers' Spanish fluency (i.e., Spanish-English bilingual vs. monolingual English) may, in part, determine school-based family involvement for Mexican-American families who speak Spanish. For these families, kindergarten to third grade classrooms with fluent Spanish-speaking teachers appeared to support – and classrooms with monolingual, English-speaking teachers appeared to limit – family involvement in the school and, in turn, the achievement of students who displayed early struggles in literacy. That is, fluent bilingual teachers appear to have indirect consequences for the achievement of Mexican-American children whose home language is Spanish, because family involvement in school-based activities increases most in this language context for children who struggle early. These results further underscore calls for more kindergarten to third grade teachers who are fluent in Spanish and English (García & Miller, 2008).

These results are in line with other research centered on Latino children who struggle early in their dominant language (English or Spanish); Willson and Hughes (2006), for example, found that parents having a high sense of responsibility for their children's educational outcomes predicted low retention rates for Latino children who initially struggled in their dominant language, and they found that being in a bilingual classroom was associated with higher later literacy skills for these children. Further, our results are in line with work indicating, more generally, that developmental bilingual education promotes long-term literacy gains for children whose home language is not English more so than English-only schooling (e.g., Thomas & Collier, 1997; 2002). Our findings extend this work by indicating that some of the benefit of having a bilingual teacher may be indirect, in so far as having a bilingual teacher promotes the school-based involvement of families who do not speak English.

Spanish-speaking families demonstrated larger increases in school-based involvement between kindergarten and third grade, in the present study, if their children demonstrated low literacy performance at kindergarten in their preferred language. This was, however, primarily due to increases demonstrated by the families of low-achieving children who regularly had Spanish-English bilingual teachers; between kindergarten and third grade, these families increased their involvement by about 1.5 school activities, on average. Comparatively, families of children who displayed low literacy achievement, but did not regularly have bilingual teachers, demonstrated increases that were about half as large.

In turn, increased family involvement at school appeared consequential for children's third grade literacy, particularly for those who displayed early literacy problems. Children with low literacy performance at kindergarten caught up to high achievers by third grade if they consistently had bilingual teachers, and they were outperforming children who demonstrated early literacy problems, but did not consistently have a Spanish-English bilingual teacher. These performance differences were explained, in large part, by family involvement in the school. Indeed, although we did not predict it, increased involvement was most strongly associated with third-grade achievement for children who initially struggled with literacy; the average level of involvement increases that we observed for the families of low achievers who were consistently in classrooms with bilingual teachers predicted nearly one-half of a standard deviation higher literacy performance.

These findings are consistent with a negative feedback loop, whereby low achievement at kindergarten triggers increased family involvement and, in turn, increased involvement promotes achievement. But, as we expected, this chain of events appeared to function best for Spanish-speaking families if their children had Spanish-English bilingual teachers throughout the early years of school. Without a shared language between family and classroom teachers, links between early achievement and later involvement appeared partially disrupted. Some scholars have highlighted the role of culture as an obstacle to in-school family involvement for Spanish-speaking Latino families, but we suspect that they can also face a more practical obstacle. With limited English skills, family involvement activities such as classroom volunteering are likely difficult, if not impractical, when communication is limited to English. Spanish-speaking families and their children's teachers may, in fact, be skeptical of the utility of in-school involvement when the language context is limited to English.

One surprising result was that the families of high-achieving kindergartners displayed decreases in involvement if their children consistently had bilingual teachers, but stable involvement in other classrooms. Given that declines did not appear to have negative consequences for these children, their relative achievement success may have led parents (and/or teachers) to encourage greater autonomy in the classroom. Indeed, it is interesting to

consider that feedback loops toward increasing autonomy for academically-successful students might also be disrupted without bilingual teachers (Grolnick & Kurowski, 1999). Yet, it is important to note that no group of families, regardless of teachers' Spanish fluency, was uninvolved in school. Even at its lowest, average involvement levels indicated that families engaged in about four activities.

We also found no evidence that the positive consequences of involvement varied depending on whether students had Spanish-English bilingual teachers or monolingual English teachers. This null result is less than surprising given improved attitudes toward school when parents are involved there (Dearing et al., 2008). Without fluent bilingual teachers, communication barriers may interrupt parents' ability to get involved in school-based activities, but the utility of involvement appears similar regardless of teachers' Spanish fluency. Speculation about this result and our findings, more generally, must be considered while acknowledging limitations to the present study, however.

Study Limitations

We see four primary limitations to the present study that should be considered when interpreting our results. First, although we adjusted for some risk factors (e.g., maternal depression and family SES), we could not rule out all potential selection biases or other omitted variable problems. Families whose children had teachers fluent in Spanish may have differed from others for unobserved reasons (e.g., motivation, community norms) related to their propensity to be involved at school. Indeed, broadly speaking, families can influence the selection of specific teachers for their children; and, more specifically, families who demonstrate high levels of school-based involvement may be more likely than other families to request teachers who are fluent in the home language (i.e., there is the potential for reverse causality in the present study).

In addition, also related to this first limit, teachers who were fluent in Spanish likely differed from other teachers in unobserved ways. For example, teachers who were fluent may have differed from other teachers along a number of instructional practice (e.g., native language instruction) and motivational (e.g., efforts to reach out to Spanish-speaking families) dimensions that were not observed. Teacher fluency in Spanish was, in fact, positively correlated with using a mixture of Spanish and English for instruction. We hope, therefore, that our results provide the impetus for future studies on this topic that take advantage of random-assignment experiments, natural experiments (e.g., school lotteries), or other strategies for addressing confounding variables and ruling out selection and omitted variable biases.

Second, mechanisms were not identified for the associations evident in this study. It remains unclear, for example, precisely why classroom teachers' fluency in Spanish predicted increases in involvement after children displayed low achievement at kindergarten or why involvement mattered most for the low achievers. For example, we did not explicitly examine communication between teachers and families. As such, we were unable to determine if, in fact, low achievement at kindergarten led to increased involvement because Spanish-speaking teachers were more effective than other teachers in communicating with these families. We speculate that a shared language allows for effective family-teacher collaboration which is likely to be correlated with increases in family involvement within schools, but alternative explanations for the increased involvement should be considered. More generally, future studies that examine the relation between bilingual teachers and struggling students' academic achievement should focus on identifying the mechanisms that drive this association.

Third, although the present study helps meet the need for more intra-group studies to understand normative development and individual differences among language-minority children (García Coll et al., 1996), these within-group analyses were based on a small sample of families with a common country of origin (Mexico) and living within one geographic location. Sociopolitical climates related to linguistic diversity and education vary considerably across the U.S., and these variations may be moderators of our results. Moreover, among Mexican-American families, there is much variability (e.g., immigration generational status, English language skills). Replication in nationally-representative (or, at least, geographically-diverse) samples with attention to the moderating effects of family characteristics and larger context would be valuable next steps.

Fourth, regarding our measures, we focused solely on quantity of family involvement in a variety of school activities and the foundational literacy skills of letter-word recognition. We were not able to place these findings within the context of a thorough study of literacy practices in the home or the quality of school involvement (for a discussion of quality of involvement, see Pomerantz et al., 2007), nor did we examine more advanced and key literacy achievements such as reading comprehension. The implications of our results are limited in scope to the specific constructs assessed, rather than to literacy context and literacy development, more generally. Despite these limitations, however, the value of our study to the existing knowledge base on family involvement in school-based activities and best educational practice for English language learners is high. Given that a large proportion of English language learners in the U.S. are Mexican-Americans (Loeffer, 2007), the incidence validity of our results is high. Moreover, we believe our study is some of the first evidence that moves the controversy of classroom language practices beyond direct implications for child achievement to considerations of indirect implications, in this case via family involvement in school.

Conclusion

The social and economic future of the United States is increasingly dependent on the academic success of the nation's Latino students (Hernandez et al., 2009; Suro & Passel, 2003). While best practice for those who are English language learners remains controversial, particularly with regard to bilingual education, we present some of the first evidence that the implications of these policy and practice decisions extend to family involvement in their children's education. Beyond any direct effects of teacher bilingual language fluency on learning, these practices may indirectly affect learning by promoting or obstructing family-school partnerships that operate to redirect struggling learners toward higher achievement. More generally, the present study also extends basic research on family educational involvement to demonstrate that developmental consequences of relationships between schools, families, and children are dependent on family-environment fit.

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Research Highlights

- A study of school-based involvement and literacy for Mexican-American students
- The moderating effects of teacher fluency in Spanish were of special interest
- School involvement increased for children with literacy problems *and* bilingual teachers
- Increased school-based involvement predicted improvements in literacy

a.

$$\chi^2 (25) = 32.73, p = .14; RMSEA = .10$$

b.

$$\chi^2 (24) = 28.25, p = .25; RMSEA = .07$$

Figure 1.

(a) Path model in which associations are constrained to be equal across classroom teachers' language capabilities. (b) Path model in which the association between kindergarten literacy and third grade involvement was allowed to vary by whether the classroom teacher is bilingual or monolingual.

Figure 2.

Change in family involvement in school between kindergarten and third grade as a function of kindergarten literacy and presence of a bilingual teacher.

Figure 3. Third grade literacy scores as a function of kindergarten literacy and classroom teachers' language capabilities. Groups with different superscripts were significantly different ($p < .05$).

Figure 4. Third grade literacy scores as a function of kindergarten literacy and level of family educational involvement at third grade. The shaded box in the figure indicates the region of significance for the interaction: the range of scores for which low and high kindergarten literacy scores significantly differed at third grade.

Table 1Descriptive Statistics for Child, Maternal, and Family Characteristics ($n=72$)

Variables	<i>M (SD)/%</i>	Min	Max
Child Gender = Male	50%		
Birth Weight = Low	6.94%		
Maternal Depression	12.88 (9.16)	2	43
Maternal Education (in years)	8.44 (3.15)	3	15
Per Person Income	\$2092.30 (1043.59)	\$300.00	\$7200.00
CCDP Group = Intervention/Experimental Group	43.06%		
Family Involvement at K	.61 (.24)	0.80	8.08
Family Involvement at 3rd Grade	.63 (.20)	1.04	8
Literacy Score at K	.17 (.20)	0	1
Literacy Score at 3rd Grade	.63 (.12)	0.30	0.98
Classroom Context = Consistently Bilingual Teachers	45.8%		

Table 2

Correlations between Covariates, Family School Involvement, Child Literacy, and Classroom Context

	Gender	Low Birth Weight	Maternal Depression	Family SES	Intervention Group	K School Involvement	3rd School Involvement	K Literacy	3rd Literacy
Gender	-								
Low Birth Weight	.16	-							
Maternal Depression	-.09	.05	-						
Family SES	-.08	.09	-.22	-					
Intervention Group	.03	-.13	-.09	.06	-				
K School Involvement	-.05	-.17	-.27*	.14	-.08	-			
3rd School Involvement	.10	-.12	-.05	.04	-.2	.54*	-		
K Literacy	.15	.36*	-.1	.07	-.1	.35*	-.00	-	
3rd Literacy	-.19	-.27*	-.18	.01	.04	.36*	.28*	.27*	-
Bilingual Teachers	.03	-.25*	.11	-.14	-.40**	.15	.16	.20	.25*

* $p < .05$

Table 3

School-based Educational Involvement from Kindergarten to Third Grade: Random-intercept Models

Predictor	Main Effects Model <i>b</i> (<i>SE</i>)	Moderation Model <i>b</i> (<i>SE</i>)
Kindergarten Involvement (Intercept)	.73 [*] (.07)	.73 [*] (.07)
Child Gender = Boy	-.03 (.05)	-.03 (.05)
Child Birth Weight = Low	-.30 [*] (.12)	-.27 [*] (.13)
Maternal Depression	-.01 (.002)	.01 (.003)
CCDP Group = Intervention	-.03 (.06)	-.03 (.06)
Family SES	.03 (.03)	.03 (.03)
Kindergarten Literacy	.52 [*] (.14)	.43 [*] (.21)
Bilingual Teachers	.00 (.00)	.00 (.06)
K Literacy × Bilingual Teachers		.17 (.29)
Change in Involvement (K to 3rd Grade)	-.02 (.02)	-.02 (.02)
Child Gender = Boy	.03 (.01)	.03 [*] (.01)
Child Birth Weight = Low	.06 (.03)	.03 (.04)
Maternal Depression	.00 (.00)	.002 [*] (.001)
CCDP Group = Intervention	-.02 (.01)	-.01 (.01)
Family SES	.00 (.01)	-.01 (.01)
Kindergarten Literacy	-.18 [*] (.04)	-.08 (.06)
Bilingual Teachers	.01 (.02)	.00 (.01)
K Literacy × Bilingual Teachers		-.19 [*] (.08)

^{*}
p < .05

Table 4
Moderation and Mediated Moderation Estimates for Third Grade Literacy: OLS Models

Predictor	Model 1: 3rd Grade Literacy	Model 2: 3rd Grade Involvement	Model 3: 3rd Grade Literacy
Child Gender = Boy	-.05* (.02)	.07 (.04)	-.06* (.02)
Child Birth Weight = Low	-.19* (.06)	-.03 (.10)	-.16* (.06)
Maternal Depression	-.00 (.00)	.00 (.00)	-.00 (.00)
CCDP Group = Intervention	.04 (.02)	-.06 (.04)	.05 (.02)
Family SES	-.01 (.02)	-.01 (.03)	.03 (.03)
Kindergarten Literacy	.39* (.10)	-.07 (.17)	.28* (.10)
Bilingual Teachers	.04 (.03)	.01 (.05)	.03 (.02)
K Literacy × Bilingual Teachers	-.30* (.14)	-.50* (.23)	-.20 (.14)
Kindergarten Involvement		.59* (.10)	
Third Grade Involvement			.19* (.06)
K Literacy × 3rd Grade Involvement			-.55* (.27)

* $p < .05$