Child care enrollment decisions among dual language learner families: The role of Spanish language instruction in the child care setting☆

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A B S T R A C T

Data from the Head Start Impact Study ($N = 1141$) and the Head Start Family and Child Experiences Survey, 2009 Cohort ($N = 825$) were used to describe child care enrollment decisions among Spanish-speaking Dual Language Learner (DLL) families. In particular, logistic regression models tested which child, family, and institutional characteristics predicted enrollment in early care and education (ECE) settings that used Spanish for instruction versus enrollment in settings that did not use Spanish. Results showed that whether the child's first language was exclusively Spanish and whether other DLL families previously attended the ECE arrangement strongly predicted whether that child enrolled. Policy implications for Head Start-eligible Spanish-speaking DLLs are discussed.

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Close to 60% of U.S. children under five years are cared for in non-parental settings including relative care (Laughlin, 2013). Enrolling children in child care is often a complex decision that parents make in light of both opportunities and constraints. Family and child characteristics, community contextual factors, and parental preferences all play a role in child care decisions (Chaudry, Henly, & Meyers, 2010; Pungello and Kurtz-Costes, 1999; Weber, 2011). Low-income parents in particular must often navigate the child care selection process with incomplete information about quality, cost, and alternative arrangements, while simultaneously juggling work schedules and the requirements of government subsidy programs (Chaudry et al., 2010). Dual Language Learner (DLL) families – families with young children tasked with learning more than one language simultaneously, their home language and English (Espinosa, 2013) – in particular may face an even more constrained child care decision-making process given that their English language skills may be limited. Because the majority of DLLs come from Spanish-speaking homes (García, 2012), Spanish use in the child care setting may prove a critical factor influencing enrollment decisions for the DLL population.

Research syntheses to date have begun to enumerate important factors affecting the child care choice process for low-income families (Chaudry et al., 2010; Pungello & Kurtz-Costes, 1999; Weber, 2011). However, much less is known about child care decisions for Spanish-speaking DLL families despite the dramatically increasing numbers of DLL children in early care and education (ECE) arrangements like Head Start and Early Head Start (nearly 40% of participants; U.S. DHHS, 2013a). Approximately 30% of all Spanish-speaking DLL children live in poverty (Stepler and Brown, 2015), and Spanish-speaking DLL children now constitute the largest total population of U.S. children living in poverty (López and Velasco, 2011). Therefore, understanding the processes through which these families in particular negotiate child care experiences given multiple demands and how Spanish use in the child care setting specifically pertains to enrollment decisions, can help inform policy for this fast-growing demographic group.

Using data from the two largest, nationally representative datasets on Head Start – the Head Start Impact Study (HSIS; U.S. DHHS, 2002–2006) and the Head Start Family and Child Experiences Survey, 2009 Cohort (FACES-2009; U.S. DHHS, 2009–2013) – the purpose of the current study was to gain an understanding of factors that inform child care enrollment decisions among Head Start-eligible Spanish-speaking DLL families. Of particular importance was the examination of the language used by caregivers in the setting, and what may have predicted participation in arrangements that used Spanish for instruction over arrangements that did not use Spanish, as this may have proven critical to the enrollment process.

1. Child care decisions in the general population

Theoretical frameworks guiding child care choice have traditionally come from the disciplines of economics (Blau, 2001) and psychology (Pungello and Kurtz-Costes, 1999). From economics, the basic model of consumer choice argues that individuals make decisions by examining tradeoffs among alternatives relative to their preferences, which are subject to time and money constraints. Such a model can predict child care choices as a result of changes in family income or increases in the price of child care. Models from psychology such as the one put forth by Pungello and Kurtz-Costes (1999) argue that the interwoven dimensions of family demographic and socioeconomic characteristics, child characteristics, home and community contexts, and parental beliefs and preferences inform families' child care decisions. Such models are effective at explaining the multidirectional influences of child care choice (Chaudry et al., 2010).

More recently, Meyers and Jordan (2006) proposed an integrated child care decision framework by introducing the concept of child care decisions as "accommodations." This accommodation framework argues that child care decisions are often subject to multiple constraints (not just cost), as parents must optimize the decision not only for themselves, but also for their children, their workplace schedules, and government subsidy program requirements. Thus, child care choices are not discrete and static decisions, but rather are based on a dynamic interplay of opportunities and constraints determined by an extensive range of family, child, and community factors, and tend to change as children age (Chaudry et al., 2010; Meyers & Jordan, 2006). Similarly, Weber (2011) argued that parental characteristics, values, and preferences for child care interact with perceived opportunities, constraints, and barriers, and through this interaction comes the selection of a child care arrangement. Child care decision-making is accordingly not usually a linear process, but one that is multi-faceted and complex.

Using such models, previous research has examined which factors predict child care choices in the general population. It has been well-documented, for example, that highly-educated mothers are more likely to use center-based care than mothers with fewer years of education (Fuller, Holloway, & Liang, 1996a; Fuller, Holloway, Rambaud, & Eggers-Pierola, 1996b; Johansen, Leibowitz, & Waite, 1996; Laughlin, 2013), and higher-income families are also more likely to use center-based care than lower-income families (Blau, 2001; Fuller, Kagan, Caspary, & Gauthier, 2002; Hirshberg, Huang, & Fuller, 2005; Laughlin, 2013). Additionally, infants and children of mothers employed part time tend to be cared for more by relatives than older, preschool-age children and children of mothers employed full time (Early and Burchinal, 2001; Laughlin, 2013). Moreover, parents who planned their child care enrollment earlier were more likely to use their preferred care type and to use higher quality settings relative to those parents who planned later (Gordan and Högnäs, 2006).

Research on racial and ethnic participation in ECE indicates that black families are more likely than white families to select center-based care (Fuller et al., 1996a; Magnuson & Waldfogel, 2005), whereas Latino (and especially immigrant) families are more likely than other population subgroups to utilize relative or familial childcare (Beltrán, 2011; Fram & Kim, 2008; Fuller et al., 1996a; Hernandez, Denton, & Macartney, 2011; Laughlin, 2013; Magnuson & Waldfogel, 2005). Other recent research, however, suggests that if center-based care options are available and accessible, and families know of their existence, Latino and DLL children will attend at the same rates as children of other subgroups (Espinosa et al., 2013; Greenberg & Kahn, 2012; Greenfader and Miller, 2014; Winsler, Robinson, & Thibodeaux, 2013).

2. Child care decisions among Spanish-speaking DLL families

In the general population, traditional choice frameworks are quite useful for articulating factors that may inform child care decisions. However, when examining the child care experiences of specifically Spanish-speaking DLL families, a sociocultural theory of development (Rogoff, 2003) may be an appropriate additional analytical lens. According to sociocultural theory, children make sense of the world around them within the specific context of their culture, and their development is an interrelated process between the individual child and their broader social environment. Much less is known about the choice process for Spanish-speaking DLL families given the historic lower levels of enrollment in center-based ECE of some Spanish-speaking DLL groups such as Mexican-origin Latinos (Espinosa et al., 2013; Winsler et al., 2013). Further, despite research indicating the benefits of ECE for low-income Spanish-speaking DLL children (Buysse, Peisner-Feinberg, Páez, Hammer, & Knowles, 2014; Gormley, 2008; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; U.S. DHHS, 2010a), other work indicates that poor access to ECE programs is a major barrier to their participation (Espinosa, 2013; Greenfader & Miller, 2014; Hernandez et al., 2011; Matthews and Jang, 2007), and even if such options are available, parents may not always be aware of their existence (Matthews and Jang, 2007). Consequently, in addition to the traditional consumer decision-making literature and the accommodation framework (Meyers and Jordan, 2006; Weber, 2011), Spanish-speaking DLL families' child care decisions are further subject to unique constraints of access, availability, and awareness of options within a broader sociocultural framework. Salient sociocultural factors pertaining to such access, availability, and awareness like immigration status, English language proficiency, country of origin, and language of the ECE setting may therefore be important theoretical considerations for their child care experiences (Hernandez et al., 2011).

Although prior studies have attempted to ascertain which factors most strongly influence low-income Spanish-speaking DLL families' child care enrollment decisions, the research field is still nascent. The literature to date suggest that ECE enrollment decisions among Spanish-speaking DLL families may be particularly related to: (1) *monetary and other constraints* similar to other low-income families such as family earnings and the supply of ECE options in local communities (Delgado, 2009; Greenfader & Miller, 2014; Hernandez et al., 2011; Santhiveeran, 2010); (2) *factors specific to Spanish-speaking DLL families* such as country of origin, immigration status, parental fluency with English, and enrollment of other DLL families at the center (Greenfader and Miller, 2014; Hirshberg et al., 2005; Liang, Fuller, & Singer, 2000; Miller, Votruba-Drzal, & Coley, 2013; Vesely, 2013; Ward, LaChance, & Atkins, 2011); and (3) *factors specific to Spanish-speaking DLL children* such as the child's Spanish and English language abilities and skills (Espinosa, 2013; Winsler et al., 2014).

2.1. The role of language of ECE setting

National Head Start policy mandates that its providers support DLL children's home language and deliver services to families in culturally responsive ways (U.S. DHHS, 2008). Therefore, a few select researchers have begun recently to focus on language of the ECE setting as a particularly salient factor related to the enrollment decisions of Spanish-speaking DLL families. Some of these studies are limited either by small sample sizes or samples not representative of the DLL population in the U.S. However, they are worth examining given this important and newly-emerging line of research inquiry, and because they employ a wide variety of research methods. Some are small qualitative studies, which help

shed light on processes related to enrollment decisions, whereas others use nationally representative data.

Vesely (2013) conducted a small qualitative study of how 40 first-generation, low-income immigrant mothers chose center-based child care for their young children. She found that although mothers selected center-based arrangements that would enable their children to learn English and interact with children from diverse backgrounds, equally or more important was the desire to enroll their children in ECE centers in which the provider also spoke Spanish. This served a dual purpose in that there was a structural convenience to having a provider speak the same language as the mother as well as a cultural way to recreate social experiences for their children similar to what they would have encountered in their home country such as El Salvador or Mexico. Thus, children could continue to learn Spanish while simultaneously learning English and mothers could easily communicate with the providers. Many of the mothers in Vesely's (2013) study also reported using social connections of other mothers from their home country to help find, secure, and especially enroll their children in child care.

Similarly, Ward et al. (2011) conducted an exploratory study of low-income immigrant communities in Denver, Colorado and Portland, Maine, two cities with changing demographics typical of the U.S. as a whole. In each city, they ran six focus groups with immigrant parents of young children to ascertain beliefs about child care and factors influencing child care decisions. In addition to many other beliefs about child care, many parents expressed concern that enrolling their children in English-only child care would risk loss of their home language and culture. Moreover, parents believed that their children would learn English no matter where they were cared for during the preschool years. However, their children would maintain their native language skills only if they were cared for by someone who spoke their language. This was particularly important for immigrant families, as they wanted their children to be able to communicate with relatives from their home country who did not speak English.

Espinosa et al. (2013) used the national Early Childhood Longitudinal Survey–Birth Cohort (ECLS-B) to compare the child care experiences of DLL families and monolingual English-speaking families. In particular, they found that Spanish-speaking DLL children were substantially more likely than other children to have a language other than English used in child care, especially when cared for by relatives or in home-based settings. Using the same data, Miller et al. (2013) and Gordon, Colaner, Usdansky, and Melgar (2013) reached similar conclusions: parents who had a desire for culturally-matched child care arrangements tended to utilize relative or home-based care over center-based care.

Although they did not examine language of the child care center specifically, Liang et al. (2000) studied several factors relating to child care selection including home language. Importantly, in an effort to disaggregate data among the Latino population, they differentiated between Latino parents who reported that Spanish was the primary language spoken in the home versus those that reported mainly use of English. They found that children of DLL families who reported mainly using Spanish at home had much lower rates of center-based ECE enrollment than children of families who reported English as the primary spoken language at home, highlighting how home language may inform child care decisions.

Lastly, in a small qualitative study of four local Head Start centers in a large urban, predominantly Latino county in the Southwest U.S., exploratory classroom observations detailed the extent of Spanish language use in the centers. Special attention was paid to how much instruction was conducted in Spanish in the classroom and for what kinds of activities. Results showed that across the county, Spanish was used for academic activities such as English vocabulary instruction, which required translation into Spanish in order to ensure all children understood the meaning of target words. It

was also used to promote important executive function skills such as planning and recall, and it helped parents and caregivers maintain close contact about the child's care. Finally, Spanish was used during important health and nutrition routines such as mealtimes (Author, manuscript in preparation).

3. Present study

Although prior research has documented that language of the child care setting is proving to be an increasingly-important consideration in child care enrollment for DLL families, and further, that rich classroom instruction can occur in the home language, these studies have largely considered language to be one factor among many influencing the child care enrollment decision and included DLL children of varying income levels or were limited to small sample sizes. In contrast, using the two largest nationally representative datasets on income-eligible Head Start children, families, and programs, the present study uniquely focused only on arrangements that explicitly instructed children in Spanish and sought to determine what predicted enrollment in such arrangements among Spanish-speaking DLL families. It was guided by Meyers and Jordan (2006)'s accommodation framework to the extent it was useful for articulating how various family, child, and community factors informed child care experiences subject to multiple opportunities and constraints, as well as by sociocultural theory to describe broader environmental factors specific to Spanish-speaking DLL families' enrollment decisions (Hernandez et al., 2011; Rogoff, 2003). Specifically, this study's primary research question was: among low-income, Spanish-speaking DLL families, what child, family, and institutional factors were associated with enrollment in ECE environments that used Spanish for instruction versus enrollment in environments where Spanish was not used?

3.1. Hypothesized results

Based on prior research as well as sociocultural theory generally (Rogoff, 2003) and specific to Spanish-speaking DLLs (Hernandez et al., 2011), it was hypothesized that parents might be more likely to enroll their children in Spanish language instruction ECE arrangements over arrangements that did not use Spanish if their proficiency with English was limited in order to facilitate better communication about the child. Parents might also enroll in Spanish language instruction arrangements if they were more recent immigrants or if they wanted their child to continue to have a high degree of exposure to the home language through teachers, staff, and other DLL children, as they might share some of the same cultural and linguistic values of child rearing. Lastly, it was hypothesized that ECE centers might be more likely to place Spanish-speaking DLL children with teachers that spoke Spanish if the child's English proficiency was limited so as to assist them with Spanish while simultaneously teaching them English to boost their school readiness.

This study aimed to further the field's understanding of the needs of Spanish-speaking DLL children eligible for Head Start, as Head Start is the largest federally-funded, means-tested early childhood program and enrolls an increasing share of DLL children (nearly 40% of total Head Start and Early Head Start participants; U.S. DHHS, 2013a). Therefore, enumerating what characteristics of this growing population were associated with enrollment in ECE arrangements that explicitly instructed in Spanish can help centers understand more why their participants attended their program and the role of language of instruction in this process. Specifically, by understanding these enrollment decisions, programs can better target their resources in ways that support home language use and provide care in more culturally-responsive ways such as bilingual

teacher and staff hiring, classroom language supports, and curriculum decisions that stress the importance of both languages (U.S. DHHS, 2008).

4. Method

4.1. Participants

This study was based on data from the two largest, nationally representative datasets on Head Start children, families, and programs. The first was the Head Start Impact Study (HSIS; U.S. DHHS, 2002–2006), which was a random assignment experiment designed to estimate the causal impact of Head Start on children's school readiness skills and parenting practices, as well as to determine under what circumstances Head Start achieved its greatest impact and for which children (U.S. DHHS, 2010a). The second was the Head Start Child and Family Experiences Survey, 2009 Cohort (FACES-2009; U.S. DHHS, 2009–2013), which was a longitudinal study of program performance, and specifically the population served; staff qualifications, credentials, and opinions; Head Start classroom practices and quality measures; and child and family outcomes (U.S. DHHS, 2011).

4.1.1. HSIS

The HSIS was a nationally representative sample of 84 Head Start grantee and delegate agencies and nearly 5000 newly entering, eligible three and four-year-old children. Children were randomly assigned to either: (1) a Head Start group that had access to Head Start program services; or (2) a control group that was not eligible to enroll in the Head Start center to which they applied for the lottery, but could enroll in other early childhood programs or services selected by their parents, including other Head Start centers not in the study (U.S. DHHS, 2010a).

The study employed a multi-stage sampling process to select a representative group of Head Start programs and children. It began with a list of 1715 grantee and delegate Head Start agencies that were operating in Fiscal Year (FY) 1998–1999. This pool was then organized into 161 geographic clusters across 25 strata in order to ensure variation across region of the country, urban and rural location, race and ethnicity, and state pre-kindergarten and child care policies. One cluster was then randomly selected from each of the 25 strata yielding 261 grantee and delegate agencies. Agencies were eliminated if they had recently closed, merged, or were serving all eligible children in their communities, and smaller agencies were grouped together. Approximately three grantee and delegate agencies were then randomly selected from each of the 25 strata, yielding a final pool of 84 grantee and delegate agencies.

These 84 Head Start agencies generated lists of 1427 individual centers that were expected to be in operation for the 2002–2003 school year. After individual programs were eliminated because they had recently closed, merged, or were serving all eligible children in their communities, and groups of centers were stratified along the same dimensions as the geographical agency clusters, 383 individual centers remained (U.S. DHHS, 2010a).

Once the centers were selected, a lottery process was used to determine which children were and were not assigned a place in Head Start. The goal was to randomly select 27 children from each center – 16 to be assigned to Head Start and 11 to the control condition. In total 4442 children were randomly selected – 2646 for Head Start and 1796 for the control condition. Data collection took place from fall 2002, at the time the treatment group entered Head Start, until spring 2006, at the end of first grade (U.S. DHHS, 2010a).

Approximately 25% of the total HSIS study sample ($N = 1141$) was classified as Spanish-speaking DLLs (see Section 4.2, below) – 690 in Head Start and 451 in the control condition. Half of the children in this subgroup sample were male, and about 10% were classified as having a disability at baseline. Nearly 70% of the mothers of Spanish-speaking DLL children had less than a high school education, and about 60% had immigrated to the U.S. in the past ten years. The majority of Spanish-speaking DLL mothers were married (63%), and in 75% of Spanish-speaking DLL households, the biological parents lived together with the study child.

Complete descriptive statistics for Spanish-speaking DLL children and families are listed in Table 1, which also includes tests for treatment and control group differences. As shown in the table, balance was achieved on all covariates between the Head Start and control groups.

4.1.2. FACES-2009

Head Start FACES was launched in 1997 as a periodic, longitudinal study of program performance. Successive nationally representative samples of Head Start children, their families, classrooms, and programs were collected in 2000, 2003, 2006, and 2009 to provide descriptive information on the population served; staff qualifications, credentials, and opinions; Head Start classroom practices and quality measures; and child and family outcomes. This study used FACES-2009 due to its enhanced focus on children who speak a primary language other than English (U.S. DHHS, 2011).

The sample design for FACES-2009 was similar to that of the HSIS and included a multi-stage sampling process to select a representative group of Head Start (1) programs; (2) centers; (3) classrooms; and (4) newly-enrolled children. Sampling at the first three stages was done with probability proportional to size.

The sampling frame of eligible Head Start programs for FACES-2009 was constructed from the Head Start Program Information Report (PIR), and were stratified along 12 strata in order to ensure sufficient variation in census region, urbanicity, percentage of racial and ethnic minority enrollment, whether the program had at least 25% DLLs, program status as a public school district grantee, the percentage of children in the program whose primary home language was English, and the percentage of children with disabilities. From this frame, a sample of 60 programs was selected. In addition, approximately two centers per program and three classrooms per center were selected for participation. Within each classroom, a sample of newly-enrolled children was selected. In total, the FACES-2009 sample included 60 programs, 129 centers, 486 classrooms, and 3349 children. Data collection took place from fall 2009, at the time the children entered Head Start, until spring 2012, at the end of kindergarten (U.S. DHHS, 2013b).

Approximately 25% of the total FACES-2009 study sample ($N = 825$) was classified as Spanish-speaking DLLs (see Section 4.2, below). Similar to the HSIS, half of the children in this subgroup sample in FACES-2009 were male, and about 5% were classified as having a disability at baseline. Sixty percent of the mothers of Spanish-speaking DLL children had less than a high school education, and almost 60% had immigrated to the U.S. in the past ten years. Close to the majority of Spanish-speaking DLL mothers were married (43%), and in two-thirds of Spanish-speaking DLL households, the biological parents lived together with the study child. Table 1 provides complete descriptive characteristics of these participants as well.

4.2. Measures

4.2.1. Spanish-speaking dual language learner (DLL) status
4.2.1.1. HSIS. Prior to program entry in the fall of 2002, treatment and control group children were administered a battery of assessments as a baseline measure of academic achievement. The language of this child assessment was chosen by HSIS as follows. At the start of the study in fall 2002, information was collected on each

Table 1
Descriptive statistics of Spanish-speaking DLLs in HSIS and FACES-2009.

	HSIS (N = 1141)				FACES-2009 (N = 825)	
	Head Start (NN = 690)		Control (NN = 451)			
	Mean/% of sample	SD	Mean/% of sample	SD	Mean/% of sample	SD
Dependent variable						
Teach children in Spanish	0.64		0.60		0.64	
Enrollment characteristics—baseline						
Child and family characteristics						
Mother recent immigrant	0.59		0.61		0.56	
Maternal limited English proficiency	1.19	0.54	1.24	0.72	2.26	2.35
Child limited English proficient	0.67		0.67		0.65	
Child's first language Spanish	0.80		0.82		0.92	
Important child know Spanish					0.92	
Institutional characteristics						
Proportion of other DLL children in ECE setting	0.67	0.22	0.68	0.22	0.63	0.33
Limited competition from alternative ECE options	0.80		0.81			
Child demographic characteristics—baseline						
Age at spring assessment in weeks	238.05	31.43	241.30	25.98	217.06	25.54
Age-4 cohort	0.54		0.55		0.48	
Gender—male	0.48		0.47		0.51	
Disability	0.08		0.09		0.03	
Family demographic characteristics–baseline						
Caregiver age	30.02	6.61	29.94	5.06	30.13	6.12
Maternal education						
Less than high school	0.62		0.70		0.60	
High school diploma/GED	0.21		0.21		0.21	
Beyond high school	0.16		0.09		0.16	
Married mother	0.63		0.63		0.43	
Teenage mother	0.09		0.08		0.39	
Parents lived together	0.78		0.75		0.66	
Maternal depression	0.13		0.14		0.11	

Note: HSIS weight used = CHSPR2003WTCA. FACES-2009 weight used = P21RA2WT.

child's language ability. Assessors asked the child's primary caregiver at home three questions: (1) What language does the child speak most often at home? (2) What language does the child speak most often at this child care setting? and (3) What language does it appear this child prefers to speak? Children were tested in the language in which at least two of the three responses were the same (U.S. DHHS, 2010b). A child was classified as a Spanish-speaking DLL if they required assessment in Spanish at baseline. About 25% of the overall study sample required baseline assessment in Spanish (N = 1141).

4.2.1.2. FACES-2009. In FACES-2009, all children at baseline were given the language screener the Preschool Language Assessment Survey 2000 (preLAS 2000; Duncan and DeAvila, 1998). Children whose parents reported their primary home language was Spanish and who made five consecutive errors on the preLAS were then routed to the Spanish-language cognitive assessment (U.S. DHHS, 2013b). Using the language screener criteria, about 15% of the total FACES-2009 sample (N = 512) required assessment in Spanish at baseline.

However, many researchers and policymakers who specialize in Dual Language Learning criticize these language screeners as problematic and not indicative of children's true language abilities (U.S. DHHS, 2013c). Rather, triangulation of methods that use data from the primary caregiver, such as the one employed by the HSIS, are better predictors of children's language abilities. Therefore, the same three classification questions in HSIS were used in FACES-2009. If the answer to two out of the three questions was Spanish, the child was considered a Spanish-speaking DLL. Categorized this way, about 25% of the FACES-2009 sample (N = 825) was classified as Spanish-speaking DLLs, indicating that using only the language screener vastly underestimated the number of these children in this sample. Fifty-three percent were assessed in Span-

ish at baseline (N = 436) and 47% were assessed in English (N = 389) according to the language screener. Thus, there was over 85% agreement between the two classification methods as to whom required Spanish language baseline testing. This study chose to use the latter classification method, which is more strongly endorsed by DLL researchers and policymakers (U.S. DHHS, 2013c) and more closely aligned with the HSIS.

4.2.2. Spanish language classroom instruction

In both HSIS and FACES-2009, each study child's primary teacher or caregiver was asked if they taught the child in their care in Spanish. This variable was coded as "0" if the teacher/caregiver interviewed indicated they did not teach the children in Spanish and "1" if they did. Although this dichotomous variable was the best available in both datasets, it potentially masked tremendous variability in the amount and quality of such Spanish instruction. Some teachers might have used Spanish every day for rich content instruction and reported yes, whereas other teachers might have used Spanish much less frequently at once a week or once a month and for much simpler activities like counting numbers and responded the same. Despite the wide variability of Spanish instruction this variable could entail, it was the best available, albeit limited, measure for understanding classroom Spanish language use.

For FACES-2009 children and HSIS children assigned to the treatment group, this question was asked of the Lead Teacher in Head Start. For HSIS children in the control group, this question was asked of the child's primary teacher—either the lead teacher in another program or the family day care provider. Table 1 also provides information on the prevalence of Spanish instruction in HSIS and FACES-2009. The difference in mean Spanish instruction between the two studies was not statistically significant, and there was

sufficient variation among Spanish-speaking DLL children for this outcome in both datasets.

4.2.3. Enrollment characteristics

This study used observable sociocultural measures from HSIS and FACES-2009 that might inform Spanish-speaking DLL families' enrollment decisions in Spanish language instruction ECE settings. These enrollment characteristics are listed in Table 1 and are described below.

4.2.3.1. Maternal proficiency with English.
In both HSIS and FACES-2009, this was a categorical variable of 1–7 rated by the study interviewers of the mother's proficiency in English from 1, "No English Language Problem" to 7 "Speaks English with Difficulty." The mean in HSIS was about 1.20, whereas the mean in FACES-2009 was about 2.25.

4.2.3.2. Maternal recent immigration status.
In both HSIS and FACES-2009, this was a dichotomous variable indicating whether the child's mother was foreign born and had lived in the U.S. less than 10 years (1 = yes, 0 = no). About 60% of the mothers in both HSIS and FACES-2009 were recent immigrants.

4.2.3.3. Child limited English proficient.
In both HSIS and FACES-2009, this was a dichotomous variable rated by the study assessors of whether the study child had a problem understanding English (1 = very much or somewhat, 0 = not at all). The mean in both HSIS and FACES-2009 was about .66.

4.2.3.4. Child's first language is exclusively Spanish.
In both HSIS and FACES-2009, this was a dichotomous variable indicating the first language a child was exposed to at home was exclusively Spanish (1 = yes, 0 = no) as opposed to some combination of both Spanish and English. Spanish was the exclusive first language for over 80% of the DLL children in HSIS and over 90% of the DLL children in FACES-2009.

4.2.3.5. Important child knows first language.
In FACES-2009 only, the primary caregiver was asked how important it was to them that their child be able to communicate in their first language. This variable was dichotomized as 1, "Essential or Very important" or 0, "Somewhat important or Not at all important." Over 90% of the primary caregivers in FACES-2009 indicated that it was important for the child to know their first language.

4.2.3.6. Proportion of other DLL children in the ECE setting.
In both HSIS and FACES-2009, the center director reported the proportion of Spanish-speaking DLL children previously enrolled in the past year per center as a share of the total number of other enrolled children. The mean proportion of other DLL children in the ECE setting was about .66 in both HSIS and FACES-2009.

4.2.3.7. Competition from alternative ECE options in the neighborhood.
In HSIS only, this was a categorical variable asked of the center director from 1 to 3 indicating the amount of competition faced from other ECE options in the neighborhood from 1 "Lots" to 3 "Not much or none." HSIS study administrators then collapsed the categories into a dichotomous variable to indicate whether there was limited competition (1 = yes, 0 = no). The mean in HSIS was about .80.

4.2.4. Covariates

In order to reduce the standard errors of the coefficients, several child and family covariates were included in all analyses. The same set of covariates was used as was in the Final Report of the HSIS (2010), which included a broad set of key child and family demographic characteristics. Child covariates included: gender; whether the child was classified as having a disability at baseline; and age in weeks at the spring assessment. Family covariates included: caregiver age in years; an indicator of caregiver depression; highest level of maternal education; and three family structure variables including whether both biological parents lived with the child, whether the child's mother was married, and whether the mother was a teenage mother at the child's birth. For purposes of analyses, all the covariates were centered at their mean. Descriptive statistics for all covariates are displayed in Table 1.

4.2.5. Non-response

As with any longitudinal dataset, there was non-response in both HSIS and FACES-2009. In HSIS, spring child assessment response rates were correlated with treatment or control status as well as child gender (U.S. DHHS, 2010b), whereas in FACES-2009 response rates were correlated with child gender and age (U.S. DHHS, 2013b). To control for this potential bias, this study weighted all analyses, including descriptives and estimation models, using the appropriate weights, which is based on the probability of sample selection at every stage multiplied by adjustment for the probability of non-response. The weights included in the analyses are listed at the bottom of every Table and helped control potential non-response bias by compensating for different data collection response rates across these demographic groups of children. Weights are important in complicated multi-stage sampling studies such as the HSIS and FACES-2009 because they allow researchers to make inferences to the relevant general population, and they account for differential selection probabilities and differential non-response (U.S. DHHS, 2010b).

4.3. Analysis plan

The analytic sample for this study was restricted to Spanish-speaking DLL children enrolled in non-parental ECE arrangements in both datasets. Then, using the observable sociocultural measures from HSIS and FACES-2009 detailed above, a series of logistic regression models were estimated in which the various characteristics predicted a dichotomous (0,1) outcome – enrollment in ECE environments that used Spanish for instruction versus environments that did not – while controlling for other potentially important demographic covariates such as child gender, age, and maternal education. Each identified factor was first included on its own in the model, along with covariates, to see if it uniquely predicted enrollment in Spanish instruction ECE settings. Then a final model was run with all the identified factors included together, along with covariates, to see which among the bundle of factors most strongly predicted enrollment in ECE arrangements that instructed in Spanish. Thus, the final regression model was:

$$\text{SPANISH ECE}_i = \beta_0 + \beta_1 \text{FACTOR}_1 + \beta_2 \text{FACTOR}_2 + \ldots$$
$$+ \beta_k \text{FACTOR}_k + \gamma \text{COVARIATES} + e_i$$

where SPANISH ECE_i was a dichotomous outcome whether the child was enrolled in an ECE setting where the teacher used Spanish for instruction; FACTOR_{1-k} were the different proxy characteristics that possibly informed the decision to enroll in an ECE environment that used Spanish for instruction versus an environment that did not; COVARIATES was a vector of additional demographic covariates; and e_i was an error term. Given the strong potential for Head Start center-level variation, all of the models included Head Start center-level econometric fixed effects with the standard errors properly adjusted for weighting and clustering. The use of both datasets offered convergence on important characteristics of

Table 2
Odds ratios from logistic regressions predicting enrollment in a Spanish language ECE setting in HSIS and FACES-2009.

	Outcomes				
	HSIS		FACES-2009		*p*-Value of HSIS/FACES-2009 difference
	Individual runs	All together	Individual runs	All together	
Child and family characteristics					
Maternal limited English proficiency	1.25~ (1.72)	1.24~ (1.66)	1.16 (0.68)	1.30 (1.07)	0.70
Mother is recent immigrant	1.06 (0.34)	1.03 (0.12)	1.11 (0.50)	1.33 (0.59)	0.65
Child is limited English proficient	1.21 (0.59)	1.19 (0.48)	1.19 (0.60)	1.30 (0.79)	0.70
Child's first language is Spanish	10.04*** (9.68)	4.10*** (3.19)	3.03* (2.19)	3.18* (2.25)	0.57
Important that child knows first language			1.15 (0.48)	1.25 (0.93)	
Institutional characteristics					
Proportion of other DLL children in ECE setting	1.28*** (3.95)	1.32*** (3.75)	3.72* (2.22)	3.78* (2.26)	0.40
Competition from alternative ECE options in the neighborhood	2.90*** (3.82)	1.46 (1.17)			
N	1015	1015	725	725	
R^2		0.32		0.11	

Note: odds ratios presented in table. *T*-statistics in parentheses.
~$p < 0.10$. *$p < 0.05$. ***$p < 0.001$.
Teach in Spanish outcome is teacher report. Variables all dichotomous except for "Maternal Limited English Proficiency" and "Proportion of DLL Children in ECE Setting", which are continuous and standardized. Head Start center-level fixed effects included in all models. Demographic covariates (centered at mean): child cohort, child gender, child disability status, maternal education, maternal marital status, caregiver depression, teenage mother status, caregiver age, and child age at spring assessment. HSIS weight used = S03TRWTCA_PI_TS; FACES-2009 weight used = T12TCHWT.

Spanish-speaking DLLs that are associated with Spanish instruction ECE enrollment decisions.

The coefficients in all of the models are expressed as odds ratios (OR). Odds ratios represent the odds that an outcome will occur given a particular variable, compared with the odds of the outcome occurring in the absence of that variable. The present study calculated odds ratios to determine the association of a particular characteristic for DLL enrollment in a Spanish language instruction ECE environment over one that did not use Spanish. An odds ratio greater than 1 indicated that this characteristic increased the chance of enrollment in an ECE environment that used Spanish for instruction over a center that did not, whereas an odds ratio less than 1 meant that this characteristic reduced that chance.

5. Results

5.1. Preliminary analyses

Preliminary analyses tested the association between each separate individual factor and enrollment in ECE environments that used Spanish for instruction versus those that did not, which are presented in Table 2. Among all Spanish-speaking DLL children, whether the child's first language was exclusively Spanish positively predicted whether the study child's parent enrolled them in an ECE setting that instructed in Spanish over one that did not in both HSIS and FACES-2009. Similarly, the higher the proportion of other Spanish-speaking DLL children previously enrolled in a given Spanish language center, the more likely the study child's parent enrolled them in that center in both datasets. In HSIS only, if the center faced limited competition from other ECE arrangements in the neighborhood, the study child's parent more likely enrolled them in an ECE setting that instructed in Spanish versus one that did not use Spanish.

5.2. Principal regression analyses

The principal regression analyses consisted of regressions that included all the factors together, which are also presented in Table 2. The same factors as in the individual runs remained significant predictors of ECE enrollment where Spanish was used for

instruction across both datasets. If the study child's first language was exclusively Spanish, the parent was more likely to enroll them in an ECE setting that instructed in Spanish over one that did not in both HSIS (OR = 4.10, *p* < .001) and FACES-2009 (OR = 3.18, *p* < .05). Likewise, the higher the proportion of other Spanish-speaking DLL children previously enrolled in the Spanish language center, the more likely the study child's parent enrolled them in that center in both HSIS (OR = 1.32, *p* < .001) and FACES-2009 (OR = 3.78, *p* < .05).

Despite the expected high association among the enrollment characteristics, there was no evidence of multicollinearity in the analyses that included all of the factors. The highest correlation among any of the predictive factors was only .44 for maternal recent immigration status and whether the child was limited English proficient. Furthermore, a Variance Inflator Factor (VIF) test was performed, which quantifies the severity of multicollinearity. It tests how much the variance of a regression coefficient increases because of multicollinearity, i.e., how inflated the variance of a coefficient is compared to what it would be if the variable was uncorrelated with any other predictors in the model (Allison, 1999). All of the VIFs from each of the enrollment characteristics were less than two. Although there is no official criterion for how high a VIF indicates a serious multicollinearity problem, it is generally accepted that a VIF of less than ten indicates tolerable multicollinearity (Hair, Anderson, Tatham, & Black, 1995; Menard, 1995; O'Brien, 2007).

Lastly, because this study analyzed two independent samples of Head Start programs, families and children collected seven years apart with varying sample sizes, it further tested whether the odds ratios from HSIS and FACES-2009 were significantly different from each other using a two-sample test of independent means to see if the results from each dataset individually truly replicated across both. Specifically, the *p*-value of the HSIS/FACES-2009 difference for the first significantly predictive factor, the child's first language was exclusively Spanish, was .57. The *p*-value of the HSIS/FACES-2009 difference for the second significantly predictive factor, proportion of other Spanish-speaking DLL children previously enrolled in the ECE setting, was .40. Because none of the odds ratio differences were statistically significant, the results appear to be robust across the two independent Head Start samples of HSIS and FACES-2009.

6. Discussion

This study used the HSIS and FACES-2009 datasets to ascertain which child, family, and institutional characteristics pertaining to low-income, Spanish-speaking DLLs were associated with enrollment in ECE arrangements that used Spanish for instruction versus arrangements that did not use Spanish. It examined this question within each of the two datasets individually, and then further analyses were conducted to determine if the results replicated across both datasets of HSIS and FACES-2009.

Although it was hypothesized based on prior theory and research that each of the characteristics tested in this paper might be important for Spanish-speaking DLL families' ECE enrollment decisions, in actuality, only two predictive factors achieved statistical significance across both HSIS and FACES-2009. The first was whether the DLL child's first language was exclusively Spanish. Children with Spanish as their exclusive first language were significantly more likely to be enrolled in an ECE arrangement that used Spanish for instruction over an arrangement that did not use Spanish. The second important characteristic was the proportion of other DLL children previously enrolled in the center. The higher the proportion of other DLL children previously enrolled in a Spanish language instruction ECE setting, the more likely the parent of the study child enrolled them as well.

The results suggest that there are social influences in child care enrollment, particularly among Spanish-speaking DLL families, and the findings converge with previous research on Spanish-speaking DLL children's experiences in child care. Similar to Vesely (2013) and Greenfader and Miller (2014), DLL families in this study tended to be clustered in the same centers and parents were more likely to send their children to a center if it served higher proportions of DLL children. Reciprocally, centers were generally responsive to the surrounding population enrolled in their centers, had better language capacity to serve Spanish-speaking DLL families, and thus hired teachers who were able to use the home language of Spanish for classroom instruction. In communities in HSIS that faced limited competition from other child care centers, parents were even more likely to enroll their child in an ECE setting that instructed in Spanish, perhaps because it might have been the only center available in the area and it was catering to the surrounding population.

Similarly, parents in this study tended to enroll their children in centers where providers spoke their children's first language. This finding is consistent with sociocultural theory (Hernandez et al., 2011; Rogoff, 2003) and prior research demonstrating that some DLL parents desired a culturally-matched ECE arrangement so that their child could maintain connections to family members and cultural experiences in their home country (Gordan et al., 2013; Miller et al., 2013; Vesely, 2013; Ward et al., 2011) and the parents could have a provider with whom they could speak with ease (Vesely, 2013). As determined by Ward et al. (2011), these parents assumed that children would learn English in school through sheer exposure to the language, but they would only be able to maintain their home language abilities and skills if their providers also spoke the language. In addition, given national Head Start mandates to increase enrollment and quality of services in areas with large numbers of DLL families (U.S. DHHS, 2008), it makes sense that parents would enroll their child in a center where the providers spoke their child's first language.

Some observational qualitative evidence supports this. In the study of four local Head Start classrooms in a large urban, predominantly Latino county in the Southwest U.S., discussions with center directors and observations of parents indicated that although challenging, Head Start goes to great lengths to recruit, hire and retain qualified bilingual teachers and staff. They also make a special effort to engage parents as well. All communications and reminders to parents are in both English and Spanish, and teachers report on children's progress in both languages. According to the center directors, the bilingualism promoted by Head Start helps foster a close parent-caregiver connection regarding the child (Author, manuscript in preparation). Mancilla-Martinez and Lesaux's (2014) study of Head Start teachers had similar findings, in that Head Start uses a two-pronged strategy for teacher recruiting and retention. They first focus on creating a communication pipeline for teachers from the classroom to the local community and then provide ongoing support and professional development for their staff. This strategy helps attract and retain teachers who share the linguistic background with the children they serve.

On the other hand, it was hypothesized that several additional salient sociocultural factors pertaining to Spanish-speaking DLL families such as maternal recent immigration status and child's proficiency with English would be significant predictors of enrollment in child care centers that instructed in Spanish, as prior research (Miller et al., 2013; Vesely, 2013; Ward et al., 2011) and theory (Hernandez et al., 2011) have found these factors to be important. Such factors pertain directly to the specific context of DLL children's culture and stress the interrelated process of development between the individual child and their broader social environment. Because these characteristics were not significant in this study, it may be that dynamics other than culture determined these enrollment decisions such as structural considerations. For example, parents may simply want themselves and their child to feel comfortable in their child care setting, necessitating a provider that can speak Spanish and higher proportion of DLL children enrolled at the center. Nonetheless, this study's findings are consistent with national Head Start mandates to value and support the home language of children in surrounding communities (U.S. DHHS, 2008), and future work can attempt to distinguish better between cultural and structural reasons for ECE enrollment decisions.

6.1. Limitations and future directions

Some study limitations should be noted. First, although the HSIS was a random assignment experiment, due to small sample sizes and power issues, it was necessary to examine the enrollment decisions of Spanish-speaking DLLs by combining across the treatment and control conditions. Therefore, it was not possible to take advantage of the random assignment feature of the data for this study, and the results reported here are not causal. Nonetheless, because the findings replicated across two large, independent samples of Head Start children, families, and programs, these results are likely to be more robust than would be possible from either sample alone. These data are the best currently available to address the questions asked in this study, though future studies with larger experimental sample sizes would help answer similar research questions on predictors of enrollment in a causal way. Alternatively, future prospective design studies could select Spanish-speaking DLL families based on the enrollment characteristics and follow them to get a better sense of their ultimate child care enrollment decisions.

Second, the purpose of this paper was to identify child, family, and institutional factors that were associated with enrollment in ECE arrangements that used Spanish for instruction versus arrangements that did not. Although the dichotomous outcome variable used to ascertain these selection factors was crude and potentially masked tremendous variability in actual Spanish use in the classroom, it was the best available, albeit limited, measure for understanding these classroom language dynamics. Nonetheless, the findings from this study raise important issues of how much instruction in Spanish actually occurs in the classroom, the quality of such instruction, and whether instructing children in Spanish is indeed beneficial for DLLs' language skills in English and Spanish. Although answering such questions is beyond the scope of the current study, it is important to understand not only why parents

enroll their children in care arrangements that instruct in Spanish, but also how much instruction and for what kinds of activities is Spanish used, the quality of such instruction, and if such instruction improves children's language outcomes. Research studies building capacity to answer questions on DLL children go together with programmatic efforts to improve services for these children (U.S. DHHS, 2013c). Therefore, future work can answer these questions, particularly if national data sets collect more detailed information on classroom Spanish use while new qualitative studies such as the paper in preparation by the author attempt to describe these language dynamics in detail.

Given that Spanish-speaking DLL children are the fastest growing demographic in the U.S. as well as an increasing share of Head Start and Early Head Start participants (nearly 40%; U.S. DHHS, 2013a), the results of this paper and future work have clear implications for policy and practice. The findings can help centers respond to Head Start mandates (U.S. DHHS, 2008) to support DLL children's home language and provide services to families in culturally responsive ways by better targeting their resources toward bilingual teacher and staff hiring, classroom language supports, and curriculum decisions that stress the importance of both languages. The results further underscore the importance of engaging DLL parents as there are social influences in child care enrollment decisions especially among these families (Greenfader and Miller, 2014; Vesely, 2013).

Lastly, the distinction between child care choice as traditionally thought of in the consumer literature for the general population and child care enrollment decisions among Spanish-speaking DLL families is an important one. Though this line of research is still in its nascent stages, it is important to keep in mind that much less is known about the actual child care choice process for DLL families compared with the general population given historic lower levels of enrollment in formal ECE of some Spanish-speaking DLL families such as Mexican-origin Latinos stemming at least partly from issues of access, awareness, and availability (Espinosa, 2013; Espinosa et al., 2013; Greenfader and Miller, 2014; Hernandez et al., 2011; Matthews and Jang, 2007; Winsler et al., 2013). Relatedly, this study determined factors associated with enrollment in a Spanish language instruction ECE arrangement, which is distinct from actual decision-making at the time of enrollment, especially because there was little information in either study about the range of child care options experienced by Spanish-speaking DLL families. Therefore, future research can push the field to understand more about Spanish-speaking DLLs' actual child care choice through interviews with parents and center directors, and an assessment of access to ECE in local communities.

In sum, this study investigated child, family, and institutional characteristics that were associated with low-income DLL children's enrollment in ECE arrangements that used Spanish for instruction versus enrollment in settings where Spanish was not used. It extended prior research that has examined language as one factor among many to influence child care enrollment decisions and was the first to use the two largest nationally representative samples of Head Start – HSIS and FACES-2009 – to gain an understanding of what is associated with Spanish-speaking DLL families' decisions to enroll their children in arrangements that specifically teach in their home language. In line with the accommodation framework (Meyers and Jordan, 2006) and sociocultural theory generally (Rogoff, 2003) as well as specific to DLLs (Hernandez et al., 2011), findings from this study revealed that these enrollment decisions reflect child care experiences that are governed by complex constraints. Similar to the general population, their decisions reflect an accommodation to not only family income and the supply of ECE in local communities, but also to unique issues of access, availability, and a linguistically consonant experience. By shedding some light on these enrollment decisions, it is the hope of this study that

ECE arrangements will be better able to respond to the needs of and serve this fast-growing and important demographic of children and families.

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