



Relationships Between Classroom Practices and Language and Development Among Dual Language Learner Infants and Toddlers

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Introduction

It is widely understood that early exposure to multiple languages can be beneficial for developing proficiency and fluency in those languages. In 2017, a consensus study report by the National Academies of Sciences, Engineering, and Medicine (NASEM) synthesized a large body of research into recommendations related to the educational success for children in the United States whose home language is not English. But the report noted that empirical support for specific approaches to early childhood education for dual language learners (DLLs) younger than 5 was lacking, and that even less evidence was available for DLLs younger than 3. What is well understood, however, is that skills developed in one language often transfer to another (e.g., Koenig & Woodward, 2012; López & Greenfield, 2004). In older children, instruction can help facilitate cross-linguistic transfer of language and support literacy skills (e.g., Feinauer et al., 2013). And in younger children (i.e., as early as age 16 months), even a minimal amount of second-language exposure can influence home language development (Deanda et al., 2016). Simultaneous and continued development of both a home language and a second language can benefit children's language and literacy development as well as their cognitive and social-emotional development (e.g., Barac et al., 2014; Halle et al., 2014).

Key Findings

- Greater use of English in the classroom and higher English proficiency among teachers was associated with stronger general communication skills among DLL infants and toddlers.
- Infant and toddler DLLs who had attended their early learning and care program for a longer period of time had stronger communication skills, problem-solving skills, and personal-social skills.
- English language and learning supports in the classroom were positively related to young DLLs' English language skills, although results were not consistent across all measures and age groups.
- For DLLs from a Spanish language background, classroom Spanish exposure was positively related to children's Spanish skills, whereas English exposure was in some cases negatively associated with Spanish language skills, especially for the youngest group.

Thus, for the sake of fostering positive outcomes, it is crucial to understand how that development is related to instructional practices in early learning and care programs for these youngest DLLs.

This brief is the fourth in a series reporting findings from the [First 5 California \(F5CA\) DLL Pilot Study](#) about promising instructional practices, and it focuses on infant and toddler DLLs (ages 8 to 36 months) specifically. The full series includes briefs on the following topics:

BRIEF | How specific classroom language use practices relate to language and learning outcomes for
1 | preschool-aged DLLs from four different language backgrounds

BRIEF | How preschool-aged DLLs' language and learning outcomes differ in classrooms
2 | with different English and Spanish language use profiles

BRIEF | How classroom practices that teachers can use regardless of their language backgrounds
3 | relate to language and learning outcomes for preschool-aged DLLs

BRIEF | **THIS BRIEF—How classroom practices relate to language and learning outcomes for infant
4 | and toddler DLLs**

The study included children from four home language backgrounds: Spanish, Cantonese, Mandarin, and Vietnamese.¹ We first briefly describe the characteristics of the study sample and then turn to findings from correlational analyses examining the relationships between DLLs' experiences in early learning and care programs and their performance on measures of general development, English language development, and for children whose home language was Spanish, home language development. **Overall, we found that more language input, teacher language resources, and strategies to support language development and learning were associated with more advanced linguistic knowledge and skills among the youngest DLLs.** Those associations were usually language specific, however; that is, in general, more or richer English exposure in the classroom was associated with better scores on English assessments, and more or richer Spanish exposure in the classroom was associated with better scores on Spanish assessments. Furthermore, many plausible relationships between classroom practices and children's developmental outcomes were *not* detected in our analyses, potentially raising questions about how DLL-specific instructional approaches and child outcomes are measured for DLLs this young in age.

Relationships Between Classroom Practices and Children's Language and Development

The analyses and findings in this brief come from two broad data sources: a survey of teachers and caregivers in programs serving DLL infants and toddlers and indirect assessments of children's general development and language development.² Classroom practices were measured using the teacher survey,

¹ Analyses of infants' and toddlers' English language skills include children from all four of these language backgrounds. Analyses of infants' and toddlers' home language skills include only DLLs with Spanish as their home language (as reported by their parents).

² The study also assessed infant and toddler DLLs' social-emotional development using the *Ages & Stages Questionnaires: Social Emotional, Second Edition* (ASQ:SE2; Squires et al., 2015), which was completed by parents. Because we found no significant associations between DLLs' scores on that assessment and classroom characteristics, we do not present those results in this brief.

which was administered from May 2020 through July 2020.³ The measures of practice included (a) the percentage of classroom time in English and (b) in Spanish, (c) the frequency of activities in English and (d) in Spanish, (e) the number of teachers speaking English, (f) the number of teachers speaking Spanish, (g) teachers' proficiency in English and (h) in Spanish, (i) the number of languages teaching staff speak in total, (j) the number of books in Spanish per DLL with a Spanish language background, (k) basic use of Spanish (such as phrases and songs), and (l) general (language-agnostic) strategies for working with DLLs (such as the use of gestures or pictures, grouping DLLs with more experienced English speakers, and incorporating activities that reflect children's cultures).

Some practices in this brief are presented as classroom-level averages (e.g., average use of instructional practices or average use of English by teaching teams).⁴ The survey data include responses from 217 teachers in 103 classrooms across 74 early learning programs that served DLLs who at the time of data collection were between 8 and 36 months of age. The teachers in this sample include lead classroom teachers but also assistants and aides—anyone who was a regular caregiver in the classroom who responded to our survey.

Exhibit 1 shows average values, across classrooms, for several language and learning supports. Classroom teaching teams averaged more time in English than in Spanish (59% vs. 39%), despite there being similar numbers of teachers who spoke each language (about two). On average, classroom teaching teams spoke 2.5 languages and had 4 books in Spanish per Spanish-language DLL.

Exhibit 1. Average Values for Selected Classroom Language and Learning Context Measures

	N of Classrooms	Mean
Language and Learning Supports: English		
Percentage of classroom time in English	102	59.4
Number of teachers speaking English	103	1.9
Language and Learning Supports: Spanish		
Percentage of classroom time in Spanish	102	38.6
Number of teachers speaking Spanish	103	1.8
Number of books in Spanish per Spanish-language DLL	94	4.0
Language and Learning Supports: Language Agnostic		
Number of languages teachers speak	103	2.5

The child sample includes 324 DLLs in the 103 classrooms. Of these DLLs, 295 (91%) heard Spanish at home, 11 (3%) heard Cantonese, 13 (4%) heard Mandarin, and the remaining 5 (2%) heard Vietnamese.⁵ To gauge children's knowledge and skills, we asked parents to report on children's home language

³ Although this period was after disruptions related to the COVID-19 pandemic had begun, most of the questions on the survey instructed teachers to answer based on their classrooms and instructional practice *prior* to the pandemic.

⁴ In calculating these classroom-level averages, we gave more weight to teachers who indicated having a classroom role with greater responsibility (such as lead teacher), teachers who had been teaching in the classroom for more than a few months, and teachers who spent more time in the classroom, on the assumption that these teachers would exert the greatest influence on the children they were working with.

⁵ Because of very small sample sizes for infants and toddlers of non-Spanish language backgrounds and the potential for Spanish language inputs to also influence those children's language and development, we included all students in analyses examining both English and Spanish language practices. No practices specific to Cantonese, Mandarin, or Vietnamese were examined because of very few classrooms with DLLs of these languages.

development and teachers to report on children’s general development and English language development. Details about these assessments follow in their respective sections below.

For this brief, regression models were used to identify relationships between classroom practices and children’s skills. The data were modeled separately for each child outcome and each classroom predictor (e.g., how percentage of time English was used in the classroom was related to children’s communication skills). Models controlled for selected child characteristics such as age, household income, degree of home language exposure, and months enrolled at their early learning program.⁶

General Development

Infant and toddler DLLs’ general development was measured by the Ages & Stages Questionnaires, Third Edition (ASQ-3), a developmental screening tool that is designed for use by early educators and health care professionals (Squires & Bricker, 2009).⁷ The tool asks the respondent to report on the child’s development in several domains; these ratings (e.g., of communication skills) are language agnostic, meaning that they do not address children’s skills in any specific language but potentially across both or all of their languages. In the current study, classroom teachers completed the ASQ-3 separately for each study child in their classrooms,⁸ answering questions about the child’s communication, problem-solving, and personal-social skills, in addition to their gross and fine motor skills. This brief reports only on communication, problem-solving, and personal-social skills as those are the skills that we hypothesized would most likely be influenced by the classroom instructional characteristics and practices the study was investigating.

Key Finding: Greater use of English in the classroom and higher English proficiency among teachers was associated with stronger general communication skills among DLL infants and toddlers.

The communication skills assessed in the ASQ-3 include a range of skills, such as pointing to something the child wants, following basic instructions, and using multiword utterances. The more teachers in a classroom who reported using English in the classroom (ranging from 0 to 4, among those who responded to the survey), the higher children’s communication skills were rated (Exhibit 2). Similarly, in classrooms where teachers’ average English proficiency was higher, children’s communication skills were rated higher.⁹ Higher teacher English proficiency was also associated with higher scores on the Personal-Social section,

⁶ Which child characteristics any given model controlled for depended on the number of children in the model and on the results of initial explorations of which background characteristics were significant.

⁷ The instrument has 21 different age forms, of which our study used 15 (appropriate for the ages of the infants and toddlers in the study). Although the instrument was designed primarily to screen children for potential developmental issues, with scoring thresholds for each developmental area indicating *on schedule*, *monitor*, and *assess with a professional*, we analyzed the scores in each area as a continuous measure. To enable inclusion of all ages in a single analysis, we standardized scores within form and area based on means and standard deviations provided in the User’s Guide (Squires et al., 2009).

⁸ The ASQ-3 was sent to the lead teacher in each classroom, although they could delegate its completion for any given child to another instructor if there was someone else more familiar with the child’s abilities. Although teachers were invited to complete the ASQ-3 for each participating child in their classroom before the onset of the COVID-19 pandemic, some did not complete it until after the pandemic started. Most teachers completed the ASQ-3 in English, but if they had indicated that they preferred Spanish, they completed it in Spanish.

⁹ This finding could be driven at least in part by differences in teachers’ English skills making their ability to *understand* their students stronger or weaker. In particular, a teacher with stronger English proficiency may have felt more capable of communicating with their students or more competent to complete the ASQ-3 instrument, so the positive finding could reflect the language skills of *teachers* along with those of students.

which measures interpersonal skills such as mimicking actions and asking for help. The number of Spanish books available was marginally related to higher communication skills, but otherwise Spanish language and learning supports were not significantly associated with higher development among DLL infants and toddlers.

Exhibit 2. Summary of Relationships Between Classroom Language and Learning Context and General Development (ASQ-3) Scores

	Child Measures		
	Communication	Problem Solving	Personal-Social
Language and Learning Supports: English			
Percentage of classroom time in English	∅	∅	∅
Frequency of activities in English	∅	∅	∅
Number of teachers speaking English	↑*	∅	∅
Teachers' proficiency in English	↑**	∅	↑**
Language and Learning Supports: Spanish			
Percentage of classroom time in Spanish	∅	∅	∅
Frequency of activities in Spanish	∅	∅	∅
Number of teachers speaking Spanish	∅	∅	∅
Teachers' proficiency in Spanish	∅	∅	∅
Number of books in Spanish per Spanish-language DLL	↑†	∅	∅
Basic use of Spanish (phrases, songs)	∅	∅	∅
Language and Learning Supports: Language Agnostic			
General strategies to support learning	∅	∅	∅
Number of languages teachers speak	∅	∅	∅

Note. ↑ indicates a statistically significant positive relationship; ↓ indicates a statistically significant negative relationship; ∅ indicates no (statistically significant) relationship. *Ns* ranged from 265 to 301 children. Models controlled for the following child-level covariates: age, female, parent preferred language, household income (five categories), months at program (with missing flag), and the home language being Spanish (rather than one of the other three study languages).

** $p < .01$; * $p < .05$; † $p < .10$.

Key Finding: Infant and toddler DLLs who had attended their early learning and care program for a longer period of time had stronger communication skills, problem-solving skills, and personal-social skills.

Our analyses of general development took into account the number of months that the infants and toddlers had been attending their early learning and care program. On average, this was 13.5 months, with some children having attended the program since shortly after birth and others just having started. Although this measure served mainly as a control variable in our analyses of how instruction and classroom characteristics were related to child skills, its own relationship with child skills is worth noting. On all three outcomes measured by the ASQ-3—communication, problem-solving, and personal-social skills—we found positive associations between the number of months children had attended the early learning program and their scores ($p < .001$, $p < .05$, and $p < .05$, respectively; not shown in Exhibit 2).

In other words, having attended an early learning and care program from an earlier age was related to positive developmental outcomes for young DLLs. This finding is consistent with previous research that suggests that age of entry into early childhood programs and longer duration is beneficial for the outcomes of children who are younger than 3, including DLLs (Yazejian et al., 2015; Zaslow et al., 2010).

English Language Development

Infant and toddler language development in English was measured by the MacArthur-Bates Communicative Development Inventories (CDI), a suite of instruments designed to gauge young children’s language development (Fenson et al., 2007). The dimensions of language measured by the CDI include, for example, comprehension and production of words and phrases, knowledge of word parts (morphology), and communicative gestures. In this study, teachers completed the English CDI for each participating child. They completed the *Words & Gestures* assessment for infants (8–18 months), the *Words & Sentences* assessment for younger toddlers (18–30 months), and the CDI III for older toddlers (30–36 months).

Key Finding: English language and learning supports in the classroom were positively related to DLLs’ English language skills, although results were not consistent across all measures and age groups.

Infants (8–18 months). The English-language *Words & Gestures* instrument assesses children’s understanding of 396 simple words such as names of foods, body parts, and actions; understanding of 28 phrases such as questions and instructions; and use of 63 actions and gestures such as pointing, playing peekaboo, and pretending to feed stuffed animals. On average, infants understood 178 words and 16 phrases and displayed 28 gestures.¹⁰ Our analyses indicated that being in a classroom with more teachers who spoke English was associated with infants’ understanding of a larger number of English phrases as well as of a larger number of English words, as was being in a classroom with more teachers who spoke Spanish (Exhibit 3). This finding may simply be an artifact of infants picking up more language in classrooms with larger numbers of teachers, regardless of what language(s) the teachers speak. Classrooms with more adults can offer young learners more adult-driven, child-directed language input as well as conversations *between* adults that model more advanced language use. We also found, however, that infants in classrooms with more frequent use of activities in English, such as reading books in English and working on building English vocabulary, understood more phrases in English. A greater percentage of overall teacher speaking time in English was similarly associated with higher rates of English phrase comprehension.

¹⁰ For this measure, the 20 classrooms serving these children were staffed by anywhere from one to six teachers (average = 2). All except one of these classrooms had at least one teacher who spoke English (average two teachers); all 20 classrooms had one or more teachers who spoke Spanish (average two teachers). The study also collected data on the number of teachers who spoke Cantonese, Mandarin, or Vietnamese in any classroom that served at least one participating child who spoke that language. But because of the small numbers of Asian-language-speaking infants and toddlers in the study, particularly when broken out by age groups, we could not analyze them using the types of regression models that yielded the findings reported throughout the body of the brief.

Exhibit 3. Summary of Relationships Between Classroom Language and Learning Context and English Language Development: Ages 8 to 18 Months

	Child Measures		
	Actions and Gestures (of 63)	English Words Understood (of 396)	English Phrases Understood (of 28)
Language and Learning Supports: English			
Percentage of classroom time in English	∅	∅	↑***
Frequency of activities in English	∅	∅	↑*
Number of teachers speaking English	∅	↑*	↑**
Teachers' proficiency in English	∅	∅	↑*
Language and Learning Supports: Spanish			
Percentage of classroom time in Spanish	∅	∅	↓***
Frequency of activities in Spanish	∅	∅	↓†
Number of teachers speaking Spanish	∅	↑*	↑†
Teachers' proficiency in Spanish	∅	∅	↓†
Number of books in Spanish per Spanish-language DLL	∅	∅	∅
Basic use of Spanish (phrases, songs)	↑†	∅	∅
Language and Learning Supports: Language Agnostic			
General strategies to support learning	∅	∅	∅
Number of languages teachers speak	∅	↑***	↑**

Note. ↑ indicates a statistically significant positive relationship; ↓ indicates a statistically significant negative relationship; ∅ indicates no (statistically significant) relationship. *Ns* ranged from 45 to 48 children. Models controlled for the following child-level covariates: age, female, and income greater than \$20,000 per year.

****p* < .001; ***p* < .01; **p* < .05; †*p* < .10.

Younger toddlers (18–30 months). The *Words & Sentences* assessment measures children’s productive knowledge of 680 English words, 25 irregular English words (“word forms”), 45 English word endings, and 37 pairs of sentences with different degrees of linguistic complexity (e.g., “No wash dolly” vs. “Don’t wash dolly”). Although we found no significant associations of classroom practices or characteristics with either the number of words children produced or the linguistic complexity of their speech, their ability to produce irregular English words (e.g., *ate* and *ran*) was significantly predicted by more frequent use of *general strategies* to support learning (Exhibit 4).

Exhibit 4. Summary of Relationships Between Classroom Language and Learning Context and English Language Development: Ages 18 to 30 Months

	Child Measures			
	English Words Produced (of 680)	English Word Forms (of 25)	English Word Endings (of 45)	English Complexity (of 37)
Language and Learning Supports: English				
Percentage of classroom time in English	∅	∅	↓*	∅
Frequency of activities in English	∅	↑†	↓**	∅
Number of teachers speaking English	∅	∅	↓*	∅
Teachers' proficiency in English	∅	∅	↓***	∅
Language and Learning Supports: Spanish				
Percentage of classroom time in Spanish	∅	∅	↑*	∅
Frequency of activities in Spanish	∅	∅	∅	∅
Number of teachers speaking Spanish	∅	∅	∅	∅
Teachers' proficiency in Spanish	∅	∅	∅	∅
Number of books in Spanish per Spanish-language DLL	∅	∅	∅	∅
Basic use of Spanish (phrases, songs)	∅	∅	∅	∅
Language and Learning Supports: Language Agnostic				
General strategies to support learning	∅	↑**	∅	∅
Number of languages teachers speak	∅	∅	∅	∅

Note. ↑ indicates a statistically significant positive relationship; ↓ indicates a statistically significant negative relationship; ∅ indicates no (statistically significant) relationship. Ns ranged from 113 to 139 children. Models controlled for the following child-level covariates: age, home language exposure (with missing flag), and months at program (with missing flag).

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$.

Interestingly, children’s knowledge of English word endings had negative associations with various English-specific classroom features. More teacher speaking time in English, more frequent use of teaching strategies in English, the number of teachers in the classroom who spoke English, and teaching team average proficiency in English all independently predicted *lower* scores on the English Word Endings section. And DLLs with more exposure to Spanish in the classroom (in terms of percentage of teacher speaking time) had *higher* scores on the English Word Endings section. This curious set of results may be explained by what the English Word Endings section actually measures: the number of words a respondent has heard a child produce incorrectly where the error is consistent with widely applicable rules of English morphology. For example, a child earns a point in this section for having said “blockses” (instead of “blocks”) or “drinked” (instead of “drank”). Language acquisition research deems these kinds of errors evidence of *overregularization* (e.g., Marcus et al., 1992), and the phenomenon is commonly observed in

English-learning children.¹¹ Therefore, the negative associations between metrics of English exposure and scores on the Word Endings section could indicate that children who were exposed to more English in the classroom had made more progress in reducing overregularization. But a lower score on the Word Endings section could also indicate that a child had not yet even passed into the overregularization stage, and that the larger amount of English input they received was not yet sufficient to clue them into the rules they may eventually overapply. Relatedly, the positive association between Spanish exposure and word endings may be because exposure to a morphologically rich language like Spanish alongside English can influence English language development, arguably by helping the young learner detect abstract, meaningful linguistic regularities such as “verb tense” and “noun number” (e.g., Hsin, 2014). The finding that children who were exposed to more Spanish in the classroom earned higher scores on the English Word Endings section—which means *incorrectly* applying general, widely applicable morphological rules such as adding /-ed/ for the past tense—could be the result of this kind of cross-linguistic influence. Children exposed to more Spanish could have picked up, from Spanish, the abstract rules and representations corresponding to “number” on nouns (i.e., in English and in Spanish, adding /-s/ to most words to make them plural) and “number” on verbs (i.e., in English, adding /-s/ to most verbs to make them singular, and in Spanish, adding /-n/ to most verbs to make them plural). Applying those rules in English more universally than they should have been applied would lead to higher scores on the Word Endings section—a predictable, temporary consequence of high Spanish exposure in classrooms.

Older toddlers (30–36 months). The CDI III’s Using Language section asks the adult completing the form to answer a range of questions that indicate a child’s level of linguistic and conceptual sophistication—questions about, for example, whether the child gives reasons for things, uses high-level categories like “animal,” talks about hypotheticals using “could” or “might,” or asks about the meanings of specific words. Analyses revealed that, on average, the more frequently activities in English were used in a child’s classroom, the higher their score was on this measure, controlling for child age, sex, and level of home language exposure (Exhibit 5). In addition, in classrooms with teaching teams that had higher average proficiency in English, children’s sophisticated language use tended to be higher as well. No relationships were detected, however, between any of the classroom practices or resources examined in this study and toddlers’ English words produced or English sentences.

¹¹ In the earliest stages of language development, children often produce correct word forms even if those are irregular (e.g., “came” as the correct past-tense form of “come”). But around age 2, some children begin to detect and apply the productive rules of English (e.g., adding /-ed/ to a verb makes it a past-tense form)—sometimes in contexts where they should not be applied (e.g., saying “comed” instead of “came”). This stage of overregularization, which can last through the early school-age years, is taken as evidence that the child has passed out of the stage of language development in which much of what is learned are static, grammatically unanalyzed items and has developed the capacity for grammatical *rule* use—the foundation of the generativity of language that makes it possible to create new sentences never heard before. Thus, a higher score on the English Word Endings section of the CDI Words & Sentences form is earned for the production of incorrect noun and verb forms.

Exhibit 5. Summary of Relationships Between Classroom Language and Learning Context and English Language Development: Ages 30 to 36 Months

	Child Measures		
	English Words Produced (of 100)	English Sentences (of 12)	English Using Language Section (of 12)
Language and Learning Supports: English			
Percentage of classroom time in English	∅	∅	∅
Frequency of activities in English	∅	∅	↑*
Number of teachers speaking English	∅	∅	∅
Teachers' proficiency in English	∅	∅	↑*
Language and Learning Supports: Spanish			
Percentage of classroom time in Spanish	∅	∅	↓†
Frequency of activities in Spanish	∅	∅	∅
Number of teachers speaking Spanish	∅	∅	∅
Teachers' proficiency in Spanish	∅	∅	∅
Number of books in Spanish per Spanish-language DLL	∅	∅	∅
Basic use of Spanish (phrases, songs)	∅	∅	∅
Language and Learning Supports: Language Agnostic			
General strategies to support learning	∅	∅	∅
Number of languages teachers speak	∅	∅	∅

Note. ↑ indicates a statistically significant positive relationship; ↓ indicates a statistically significant negative relationship; ∅ indicates no (statistically significant) relationship. Ns ranged from 93 to 106 children. Models controlled for the following child-level covariates: age, female, and home language exposure (with missing flag).

* $p < .05$; † $p < .10$.

Home Language Development

Infant and toddler language development in Spanish was measured by the Spanish adaptation of the CDI (Jackson-Maldonado et al., 2003). Three separate forms were used for this study: *Palabras y Gestos* (Words and Gestures) with children between 8 and 18 months of age, *Palabras y Enunciados* (Words and Sentences) with children between 18 and 30 months of age, and a draft version of the CDI-III (described in Jackson-Maldonado et al., 2022) with children between 30 and 36 months of age. Unlike the ASQ-3 and the English CDI, the Spanish CDI was completed by the parents, rather than the teachers, of participating children. Also unlike the ASQ-3 and the English CDI, the findings from the Spanish CDI only represent children from Spanish-language households (and not Cantonese-, Mandarin-, or Vietnamese-language households, due to small sample sizes).

Key Finding: For DLLs from a Spanish language background, classroom Spanish exposure was positively related to children’s Spanish skills, whereas English exposure was in some cases negatively associated with Spanish language skills, especially for the youngest group.

The *Palabras y Gestos* assessment, used with the infant DLLs in the study, includes 428 common Spanish words that could be known to young children, asking adult respondents to indicate whether the child can understand each word. These words include animal names and sounds, food and drink items, toy names, action verbs, adjectives, and other age-appropriate words and phrases. In classrooms where a greater proportion of teacher speaking time was in Spanish, infants tended to be able to comprehend a larger number of those words than in classrooms where Spanish was used less often (Exhibit 6). Similarly, more frequent basic use of Spanish—such as exchanging greetings or singing songs in Spanish—was also associated with stronger vocabulary knowledge. Conversely, in classrooms where infants were exposed to English for a larger proportion of instructional time or where teaching strategies in English were used more frequently, Spanish-language DLLs’ Spanish vocabulary scores were, on average, lower than in classrooms where English was used less regularly.

Exhibit 6. Summary of Relationships Between Classroom Language and Learning Context and Spanish Language Development for Spanish-Language DLLs

	Child Measures				
	8–18 Months	18–30 Months		30–36 Months	
	Spanish Words Understood (of 428)	Spanish Words Produced (of 690)	Spanish Complexity (of 37)	Spanish Words Produced (of 100)	Spanish Sentences (of 22)
Language and Learning Supports: English					
Percentage of classroom time in English	↓***	∅	∅	↓†	∅
Frequency of activities in English	↓**	↑*	∅	↓*	∅
Number of teachers speaking English	↓*	∅	∅	∅	∅
Teachers’ proficiency in English	↓***	∅	∅	↓†	∅
Language and Learning Supports: Spanish					
Percentage of classroom time in Spanish	↑***	∅	∅	↑†	∅
Frequency of activities in Spanish	∅	∅	∅	∅	∅
Number of teachers speaking Spanish	∅	∅	∅	∅	∅
Teachers’ proficiency in Spanish	∅	∅	∅	∅	∅
Number of books in Spanish per Spanish-language DLL	∅	∅	∅	↑***	↑*
Basic use of Spanish (phrases, songs)	↑*	∅	∅	∅	∅
Language and Learning Supports: Language Agnostic					
General strategies to support learning	∅	↓†	↓†	∅	∅
Number of languages teachers speak	∅	∅	∅	∅	↑*

Note. ↑ indicates a statistically significant positive relationship; ↓ indicates a statistically significant negative relationship; ∅ indicates no (statistically significant) relationship. *N*s ranged from 28 to 30 children in the 8–18 months group; from 72 to 89 children in the 18–30 months group; and from 47 to 53 in the 30–36 months group. Models controlled for some or all of the following child-level covariates, depending on the number of children in the model and on the results of initial explorations of the data: age, home language exposure (with missing flag), and months at program (with missing flag). The models for the 8- to 18-month-olds did not include any covariates because of the small *N*s in that sample.

****p* < .001; ***p* < .01; **p* < .05; †*p* < .10.

Older toddlers' skill in using Spanish was measured using a form of the Spanish CDI that assessed their ability to produce 100 words and 22 sentence types. The words spanned grammatical categories (e.g., *herramienta* “tool,” *chistoso* “funny,” and *contra* “against”), and the sentence types, as on the English CDI, were offered as pairs of simpler and more complex versions of similar ideas (e.g., *Dijo, vete* “She said, go away” vs. *Le dijo que se fuera* “She told him to go away”). Children's scores for both of these measures were positively predicted by the presence of more books in Spanish in the classroom, with a stronger association found for words than for sentences. Teaching teams in the 36 classrooms serving these students reported between 0 and 20 books in Spanish per Spanish-language DLL (3.1 on average). Although the study did not document specifically how these books were used, the fact that they were available in the classroom could indicate that teachers placed more of an emphasis on cultivating complex language and ideas—for which books can be a useful tool.

Summary and Implications

In general, the analyses presented in this brief reveal **some positive relationships between classroom language resources and practices to support language development and infants' and toddlers' development of that language, but we found less evidence of transfer of skills across languages.**

This set of findings raises several implications for practice in California and beyond:

- Administrators and educators should be aware that teachers' language use, whether intentional for the purpose of supporting children or just constrained by their own language skills, can have strong associations with language development for their DLL infants and toddlers. Administrators should therefore be intentional about who they hire to bring which language skills into the classroom, informed by children's current language skills.
- Participation in early learning and care programs may offer valuable supports for DLL infants' and toddlers' development. We observed positive relationships between the number of months a child had attended their program and their general development across all three age groups studied, even when controlling for household income and other background characteristics.

LIMITATIONS AND FUTURE RESEARCH

The use of only indirect child assessments limits the study's ability to have captured children's language-related skills and knowledge. Teachers being the respondents for the ASQ-3 and the CDI may have led to less accurate data than if parents had completed the measures. Teachers may be less biased reporters than parents, however, and the associations the study detected offer a measure of validation for this approach.

The analyses conducted here are limited by the correlational design of the study necessitated by the pandemic. They thus do not allow for causal interpretations about the relationships between classroom practices and contexts and DLLs' development, despite the many plausible attested associations reported.

Future research could collect more direct measures, of both classroom practice and child skills, to understand how teachers arrange and lead their classrooms and what children truly know and can do at a given point in time.

This finding suggests the possibility that the linguistic, cognitive, and social-emotional experiences gained while attending early learning programs may be beneficial to these young learners.

- Educators should consider working to cultivate DLLs' *biliteracy* skills early, in addition to their oral language skills in more than one language. Our finding that more books in Spanish per DLL was positively linked to older toddlers' Spanish language skills supports this implication, which aligns with the guidance in the NASEM (2017) report, policy initiatives by the U.S. Department of Health and Human Services and Department of Education (2016), and elsewhere. Although the consequences of early bilingualism and biliteracy often vary by context (Byers-Heinlein & Lew-Williams, 2013), early and consistent exposure to language *and literacy* materials in two languages is a promising way to lay the foundations for positive outcomes.
- Many relationships between practices and young DLLs' outcomes that we hypothesized and explored in this analysis were not significant. Although this study intentionally focused on sampling infants and toddlers, including from non-Spanish language backgrounds, our ability to detect meaningful relationships was limited by small samples, especially for children younger than 18 months. Programs should continue to use evidence-supported practices emerging from the research base in general.
- Although analyses of relationships between classroom practices and preschool-aged DLLs' outcomes (presented in other briefs in this series) have found evidence of cross-language transfer (i.e., that Spanish use in the classroom is positively associated with some aspects of English language development), we found this relationship only for a select few findings among infants and toddlers. Home language skills likely need to be firmly in place before cross-language transfer can arise, as suggested by research showing that cross-language transfer occurs most when children have a strong foundation in the home language (Jackson et al., 2014; Koenig & Woodward, 2012; NASEM, 2017). As such, it may be particularly important to provide young infant and toddler DLLs with substantial opportunities to build their home language competency, to set them up for efficiently and effectively learning English and benefitting from cross-language transfer.

In conclusion, this brief provides some evidence of the relationships between instructional practices used with infant and toddler DLLs and their language and development. In particular, we found teachers' English proficiency, the amount of time English was used, and longer participation in early learning and care programs to be related to the youngest DLLs' language and development in general, and exposure to Spanish and the availability of books in Spanish to be related to older toddlers' Spanish language development. These findings are important to consider as California continues to identify optimal ways to support the state's youngest DLLs in their early learning and care environments, to lay the foundation for bilingualism and long-term learning.

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About the First 5 California DLL Pilot Study

In 2015, First 5 California committed \$20 million for a “DLL Pilot” to identify and promote effective, scalable strategies that early learning and care programs can use to support DLLs and their families. A key component of this initiative is a study focused on three high-leverage areas: instructional practices, professional development for early educators, and family engagement. The study is examining the practices used across different early learning settings, diverse language groups, and DLLs of varying ages and backgrounds, and the extent to which various practices are associated with child and family outcomes. Sixteen counties, selected to be broadly representative of California’s DLL population, are participating in the DLL Pilot: Butte, Calaveras, Contra Costa, Fresno, Los Angeles, Monterey, Orange, Riverside, Sacramento, San Diego, San Francisco, Santa Barbara, Santa Clara, Sonoma, Stanislaus, and Yolo. The study is being conducted by the American Institutes for Research in partnership with Juárez & Associates; CRI; School Readiness Consulting; Allen, Shea & Associates; and Stanfield Systems, Inc. Guidance is provided by a DLL Input Group composed of stakeholders, advocates, and state and national experts on DLLs.

For more information about the study and to read other study briefs and reports:

<https://californiadllstudy.org/>

www.cafc.ca.gov/

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