

What Clinicians Need to Know about Bilingual Development

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ABSTRACT

Basic research on bilingual development suggests several conclusions that can inform clinical practice with children from bilingual environments. They include the following: (1) Dual language input does not confuse children. (2) It is not necessary for the two languages to be kept separate in children's experience to avoid confusion. (3) Learning two languages takes longer than learning one; on average, bilingual children lag behind monolingual children in single language comparisons. (4) A dominant language is not equivalent to an only language. (5) A measure of total vocabulary provides the best indicator of young bilingual children's language learning capacity. (6) Bilingual children can have different strengths in each language. (7) The quantity and quality of bilingual children's input in each language influence their rates of development in each language. (8) Immigrant parents should not be discouraged from speaking their native language to their children. (9) Bilingual environments vary enormously in the support they provide for each language, with the result that bilingual children vary enormously in their dual language skills. Empirical findings in support of each conclusion are presented.

KEYWORDS: Bilingual, language, development, vocabulary, dual language, input, assessment, diagnosis

Learning Outcomes: As a result of this activity, the reader will be able to describe influences on the rate of bilingual language development; identify a language measure to estimate bilingual vocabulary and track vocabulary growth over time; and provide recommendations about home language practices to parents of bilingual children.

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As the number of bilingual children grows, the number of bilingual children in clinicians' caseloads grows also. Bilingual children pose unique challenges for clinicians, and, until recently, there was little research on young bilinguals to guide clinical practice. In the past decade, however, research on bilingual development has burgeoned, and the scientific literature now supports several conclusions that should help clinicians as they assess bilingual children and advise their parents.^{1,2} In the following sections, we present these conclusions. We focus on the findings from studies of simultaneous bilinguals (children exposed to two languages from birth and living in homes in which two languages are spoken on a daily basis). Many of these conclusions also apply to children who are exposed to a second language after infancy.

CONCLUSIONS FROM RESEARCH ON BILINGUAL DEVELOPMENT

Conclusion 1: Dual Language Input does not Confuse Children; Children can Learn Two Languages at the Same Time

It was once believed that children exposed to two languages would not realize that they were hearing two languages and that they would initially develop a single, fused system incorporating their input in both languages.³ Empirical findings suggest otherwise. Infants appear to be quite good at distinguishing one language from another, and if exposed to two languages they appear to develop two separate phonological, lexical, and grammatical systems. There are influences of each language on the other, as there are in adult bilinguals, but the children do not appear to be confused.

Newborn infants have been found to distinguish between two different languages. For example, infants tested within days of birth change their sucking behavior when recorded speech played to them through headphones switches from English to Tagalog. This is true both for newborns born to monolingual English-speaking mothers and for newborns born to bilingual English–Tagalog-speaking mothers.⁴ Even when the two ambient lan-

guages are more similar than English and Tagalog are, as is the case for Spanish and Catalan, bilingually exposed infants tested at 4 months are able to distinguish between them.⁵

Evidence also suggests that bilingually exposed children use their dual language input to build two separate linguistic systems. Studies of phonological development in bilingual children find that infants retain the ability to hear contrasts that are used in only one of their languages (infants acquiring one language tend not to be able to hear contrasts that are not used in that language⁶) and find that the acoustic properties of the sounds young children produce differ depending on which language they are speaking.^{7,8} Studies of lexical development in bilingual children find evidence of two systems in the phenomenon of lexical overlap. That is, even very young bilingual children often know words for the same thing in both their language.^{9,10} Because monolingual children tend to avoid learning two words for the same thing,¹¹ such lexical overlap in bilingual children is taken as evidence of the existence of two separate lexicons. Studies of grammatical development in bilingual children find evidence of two systems in the absence of the sort of grammatical errors one might expect if the children really had one fused system. For example, children learning French and German simultaneously do not incorrectly combine French words in German word order or vice versa.¹²

Although bilingual children appear to mentally represent their languages as two separate linguistic systems, they do not always keep them separate when they speak. Bilingual children code-switch, moving from one language to another and even using words from both their languages in a single sentence. Such code-switching, between or within utterances, does not mean the children fail to differentiate between the two languages, however. Adult bilinguals also produce mixed utterances,¹³ and they clearly know they speak two languages. A variety of factors influences code-switching behavior among bilinguals, both adults and children. One is that bilinguals seem to reach into their other language when do not find the word they need in the language they are

speaking.¹⁴ If the other person in the conversation is also bilingual, this is an appropriate communicative strategy. A final piece of evidence that young bilingual children know they are acquiring two languages is that they show awareness of which people in their environment understand which language.¹⁵ A French-English bilingual child, for example, uses French more frequently with those she knows speak only French and English more frequently with those she knows speak only English. Young children do not get this perfectly correct, but they do not randomly select a language regardless of their listener.¹⁵⁻¹⁷

Evidence that children are not held back by any confusion caused by dual language exposure comes from studies of the rate of language development in young bilinguals. Although the rate of single language growth lags behind that of monolinguals (see Conclusion 3), bilingual children's rate of total vocabulary growth is equal to or greater than monolingual children's rate of total vocabulary growth.^{1,10,18,19} That is, in the early stages of language development, bilingual children appear to acquire new words at a rate similar to that of monolingual children, but the bilingual children's vocabulary knowledge, like their language experience, is divided between two languages.

Conclusion 2: It Is Not Necessary For The Two Languages To Be Kept Separate In Children's Experience In Order For Children To Acquire Two Languages Without Confusion

Although parents trying to raise their children to become bilingual are often advised to follow the "one-parent, one-language" principle,²⁰ this advice does not have a body of research behind it. And although the advice is frequently offered, it is not clear how many parents follow it.²⁰⁻²³ The use of both languages by bilingual speakers is normative in many bilingual communities and extends to language use in the home.^{22,23} Two studies of 2-year-old children in Spanish-English bilingual homes have found that the degree of language intermixing children experienced was largely unrelated to the children's skills in English or Spanish.^{22,23} It should be pointed out, however, that all chil-

dren in this bilingual community experienced a high degree of language intermingling. It is not possible to know what the children's language development would have looked like if the languages were kept separate, because that did not happen for any child. There is some evidence that within-utterance language mixing among parents of 18-month-olds is associated with the children having slightly smaller vocabularies.²⁴ The explanation offered for this finding is that some of the clues to word boundaries that apply within a language are less reliable between languages, making the word learning task more challenging. There is no argument that exposure to mixed input hampers children's ability to realize they are hearing two languages and to acquire two separate systems.

Conclusion 3: Learning Two Languages Takes Longer Than Learning One; It Is Normal For Bilingual Children To Lag Behind Monolingual Children In Their Rate Of Single Language Development, And It Takes A Long Time To Catch Up

When children acquire two languages simultaneously, the rate of development in each language is somewhat slower than the rate of single language development in monolingual children. As a result, bilingual children lag slightly behind monolingual children of the same age in their vocabulary and grammatical development when measured in each language separately.^{1,25-30} Given the evidence that the rate of monolingual development depends on how much input children experience,³¹ it should not be surprising that bilingual children, who must on average receive less input in each language (unless they sleep less or their parents talk twice as much), take longer to learn each of their languages than monolingual children take to learn just one. The size of the lag associated with bilingualism varies depending on the domain of language under consideration and age. Bilingual children's phonological skills and higher-level narrative skills are often closer to monolingual levels than their vocabulary and grammar,^{32,33} and their receptive abilities may be stronger than their expressive

abilities.³⁴ Although the size of the vocabulary knowledge gap diminishes with age,³⁵ even adult bilinguals tend to have smaller vocabularies in each of their languages than monolinguals. This should not be surprising because vocabulary learning continues throughout the life span and does not have a point at which it is complete. In grammar, under optimal circumstances of continued and consistent exposure to two languages, some evidence suggests bilingual children catch up to monolingual children by the age of 10 years.²⁷

In contrast to the conclusion being presented here, there were early and influential arguments that children can acquire two languages at the same rate as monolingual children acquire one. The findings on which these arguments were based, however, came either from very small samples, such that even a 20 percentile difference between groups did not reach statistical significance or from comparison of bilingual children to monolingual norms.^{9,36} As Bialystok has pointed out, the normal range of variation is wide.³⁷ Thus, bilingual children can be delayed relative to monolingual children and also be within the normal range of variation.³⁵

Conclusion 4: A Dominant Language Is Not Equivalent To An Only Language; Bilingual Children Often Score Within The Normal Range For Monolingual Children In Their Dominant Language, But They Still Are Not Performing As Well As They Would If They Were Hearing And Learning Only One Language

Most bilingual children are stronger in one of their languages than the other, and children who are strongly dominant in one language are very likely to perform within the normal range of variation for monolingual children. This does not mean that assessing a bilingual child in his or her dominant language is equivalent to assessing a monolingual child in his or her only language. The evidence is clear that diminished exposure has effects on language acquisition. Two-year-olds with balanced input (i.e., each language constituted between 40 and 60% of exposure)

lag significantly behind monolinguals, and in bilinguals, children's skills in each language are significantly related to the proportion of their input that is in that language.^{18,38} A study of 16-month-old children's vocabulary comprehension found that even 80% exposure to a language was not sufficient to reach the level of a monolingual comparison group.³⁹

The question of whether there is a threshold after which more input is not additionally beneficial is often raised. There is insufficient evidence to provide a clear answer to this question at present. On the one hand, the findings just reviewed that 80% of input is not equivalent to 100% of input suggests there is no threshold. On the other hand, the commonalities among children worldwide in the rate and course of language acquisition suggest there are constraints on how rapidly language can be acquired. Doubling a child's input would not result in doubling the rate of language acquisition. Furthermore, although acquiring two languages simultaneously takes longer than acquiring one, it does not take twice as long.

One can also ask about minimum thresholds. That is, is there some amount of exposure necessary for children to learn anything? The evidence suggests that early in development, children learn vocabulary in proportion to their exposure, even if that exposure is as little as 20% of their input.^{18,38} Whether that is sustainable is a different question. Children are more likely to use the language they know better, and they make faster progress in the language they use more.⁴⁰

Conclusion 5: A Measure Of Total Vocabulary Provides The Best Indicator Of Young Bilingual Children's Language Learning Capacity

Because young bilingual children's overall language knowledge is based in two languages, their learning abilities are best judged with an assessment of what they know in both languages. Two dual language-based indicators have been proposed: total vocabulary and conceptual vocabulary, both based on administration of the MacArthur-Bates inventories.^{41,42} For total vocabulary, the child's scores in each language are summed. For conceptual vocabulary, the individual language scores are summed

and then the number of items for which the child has words in both languages is subtracted, yielding a measure of the number of concepts for which the child has a word in either language.

Each of these indicators has its proponents, but we think the argument for total vocabulary is stronger. Spanish–English bilingual children’s total vocabulary scores are very similar to monolingual children’s single vocabulary scores in the period between 22 and 30 months,^{10,18} and a measure of total vocabulary in bilinguals identifies a similar proportion of children as at risk, using monolingual norms.¹⁰ In contrast, conceptual vocabulary scores used with monolingual norms suggest that the proportion of children with impaired language learning abilities is higher among bilingual than monolingual children.¹⁰ It is difficult to imagine how a bilingual norming group would solve this problem because the degree of overlap between bilingual children’s two lexicons varies enormously, depending on the overlap in the contexts in which the children are exposed to each language. Another advantage to total vocabulary in assessment of young bilingual children is that it can better track change over time than conceptual vocabulary because conceptual vocabulary will not show growth to the degree that the child acquires overlapping items. A final argument that total vocabulary is the best indicator of young bilingual children’s learning abilities is that among bilingual children in the United States, who become increasingly exposed to English with age, total vocabulary measured between 22 and 30 months is a significant predictor of English vocabulary at 48 months.⁴³

Although subtracting all lexical overlap, as in the conceptual vocabulary procedure, seems to exclude too much from the estimate of what the bilingual child has learned, there is a good argument for subtracting highly similar phonological forms. The evidence for this is that 18-month-old children who are bilingual in two languages that share many phonological forms, Spanish and Catalan, have larger total vocabularies than monolingual children, and the additional knowledge can be attributed to the phonological forms that do double-duty.¹⁹

The feasibility and value of a total score for children who are too old for the full MacArthur

inventories has not been tested. There are other instruments designed or adapted for bilinguals to be administered in a manner that yields a conceptual score by allowing the child to respond in either language.⁴⁴ Although conceptual scoring appears to have advantages over single language assessment for some purposes,⁴⁵ it is also sometimes important to know a child’s skill level in a particular language. Children whose conceptual vocabulary scores correctly classify them as unimpaired are likely, nonetheless, to experience difficulty in U.S. schools if their English skills are weak. National data in the United States show that bilingual children’s English language skills at school entry predict their academic outcomes through the eighth grade,^{46–49} making assessment of all children’s English skills important for assessing school readiness.

Conclusion 6: Bilingual Children Can Have Different Strengths In Each Language

Characterizing the nature of a bilingual child’s proficiency in two languages is more complex than simply identifying which language is dominant and by how much. Bilingual children can have very different sorts of experiences in their two languages, and these differences in experience potentially produce multiple patterns of bilingual proficiency in young children.⁵⁰ To illustrate, bilingual children may know words to do with things at home in their home language and words to do with things at school in their school language.⁵¹ As another example, a bilingual child may have comparable levels of comprehension skill in two languages but have better expressive skills in one language than the other. Many adults describe themselves as passive bilinguals—able to understand two languages but able to speak only one, and several studies have found evidence of such a receptive–expressive gap in young bilingual children.^{34,51}

Conclusion 7: The Quantity And Quality Of Bilingual Children’s Input In Each Language Influence Their Rates Of Development In Each Language

Several studies have assessed the balance or relative amount of exposure to each language children

in bilingual homes experience, with the consistent finding that children develop more rapidly in the language they hear more.^{18,22,38} Furthermore, as children's relative levels of exposure change—because of travel, visiting relatives, change in child care arrangements, and so on—skill level changes as well. Of course, relative quantity is merely an indicator of the variable that really matters and that is total quantity.⁵²

Some input is more useful for language acquisition than other input, however. It is not just quantity of input that matters, but also quality. There is every reason to think that the quality indicators that apply to monolingual input also apply to input in two languages. That is, use of a varied vocabulary, complex and varied syntax, and decontextualized speech should be positive predictors of children's language growth.^{53–55} These features have not been directly examined in studies of input and bilingual development, however. There is evidence from bilingual children that exposure to language in the context of book reading is supportive of language growth,^{56,57} and there is also evidence that language exposure via television is not particularly supportive.⁵⁶ Hearing a language from several different speakers is more supportive of language development than the same number of hours of language exposure from fewer speakers.^{22,58} This finding may reflect effects of the density of talk—more speakers results in more child-directed speech. It may also reflect an effect of the richness and variability in input that comes from hearing multiple speakers.

One indicator of quality identified in studies of bilingual children is the proportion of input provided by native speakers. In two separate studies, one study of 25-month-olds in Spanish–English bilingual homes and one of 30-month-olds in Spanish–English bilingual homes, the percent of English exposure that was provided by native English speakers was a significant correlate of children's English skill, over and above the effect of the amount of English exposure the children experienced.^{22,23} The finding of a unique benefit of native child-directed speech to children's language development is consistent with other findings in the literature. A study of immigrant families in an English-speaking province of Canada found that use of English at home

by the parents was not a predictor of the children's English skill while exposure to English outside of the home through friends and organized activities and also through media was a significant predictor suggesting, perhaps, the limited value of input provided by parents who are not themselves very proficient in the language.⁵⁹ Among a sample of Latino families and their children who were 4 to 5 years old, mothers' English proficiency was related to their children's English language skills.⁶⁰ Among 4-year-old Spanish–English bilinguals, English use at home was a stronger predictor of children's English language skills in homes where one parent was a native English speaker, compared with homes in which both parents were native Spanish speakers.³⁵

An important next question for research is why input from native speakers is more supportive of children's language development than input from nonnative speakers. One suggestion comes from ongoing work in our laboratory, which finds that when parents talk to their children in their native language, they use a more diverse vocabulary than when they talk to their children in their second language.⁶¹ On the one hand, this is a surprising finding, because the nonnative speakers were highly proficient in English and, after all, they were talking to 2.5-year-old children. On the other hand, the vocabulary used in playing with picnic and zoo animals might be areas of weakness for adult learners of a second language.

Conclusion 8: Immigrant Parents Should Not Be Discouraged From Speaking Their Native Language To Their Children

The findings just discussed suggest that when immigrant parents speak their late-acquired English to their children, they may be benefitting their children's English skills less than is hoped for by those giving this advice to parents, and they are, at the same time, significantly diminishing their children's opportunities to learn the heritage language. There are many reasons that heritage language acquisition should be a valued outcome for children in immigrant families. One is that many parents would like to maintain their cultural heritage, and language is a large part of that heritage. There are other reasons as well. Children

in immigrant families who can speak their parents' heritage language have better family relationships and stronger ethnic identities than those who cannot, and good family relationships and strong ethnic identity are positively related to other desired outcomes, including academic achievement.^{62,63} Parents may be better able to provide cognitively stimulating input to their children in their native compared with second language. Findings suggestive of this sort of benefit of heritage language use come from an analysis of a nationally representative sample of ~14,000 children born in 2001, who were followed for 5 years. Among children of immigrant parents in that sample, children from homes in which the heritage language was spoken in addition to English showed stronger cognitive outcomes than children from immigrant homes in which only English was spoken.⁶⁴ Finally, higher-order language comprehension and literacy skills appear to transfer from one language to another. Children who are good at reading Spanish tend also to be good at reading English,⁶⁵ and there is some evidence that interventions that enhance children's literacy experiences in their heritage language can have positive effects on early literacy development in English.⁶⁶ Thus, minority language-speaking parents can help their children acquire some school-relevant skills through interactions that occur in the minority, heritage language.

Conclusion 9: Bilingual Environments Are Heterogeneous In The Support They Provide For Each Language; There Is No Average Bilingual Experience Or Bilingual Skill Profile

There is a great deal of variability among homes that share the property of exposing children to two languages. Homes differ in the balance of the two languages. Homes differ in the number of speakers who use each language. Homes differ in the proportion of each language that comes from native speakers. And, of course, homes differ in all the factors that vary among monolingual homes, including how much adults talk to children, how much adults read to children, the lexical richness and syntactic complexity of the language used, and so on. There are a few family structure variables that are

systematically related to properties of the language environment in the home. The balance of use of the heritage and community language is influenced by the language backgrounds of the parents and by the age of the children in the household. When both parents are speakers of a minority language, that language may be the dominant language at home, but when use of a heritage language falls to only one parent, the community language tends to dominate.²² Children who attend school tend to use the community language at home and have the effect of increasing others' use of that language in the home as well⁶⁷; thus young bilingual children with older siblings are likely to have more advanced English skills and weaker heritage language skills than children the same age without older siblings. When bilingual children divide their time between two households, the patterns of language use may be very different across households. Thus, knowing about a child's language experience in only one home may not provide a representative picture of the child's total home language experience.

Children's child care arrangements are another source of variability in their language environments. Although it would seem that center-based care is likely to increase children's exposure to the community language, two other factors modulate that effect. Even in programs that are not explicitly bilingual, staff may speak the children's heritage language and use it frequently. In addition, when the teachers and classroom aides are native speakers of the heritage language in a bilingual community, their community language proficiency may be less than natively like. Thus exposure to the community language through center-based early care and education may not increase bilingual children's community language skills as much as equal exposure to input from native speakers would. Because bilingual environments are so heterogeneous, bilingual children are extremely varied in their levels and profiles of dual language skill.

DISCUSSION

Two difficult jobs fall to clinicians who see bilingual children. One is the diagnosis of language impairment; the other is providing

counsel to parents who worry about the consequences of the bilingual experience for their children's language development. The diagnostic job is complicated because it is particularly difficult to steer a course between overdiagnosing and underdiagnosing language impairment when the client is a bilingual child. Anecdotally, we have encountered both. Overdiagnosis occurs when a bilingual child scores below the average range on tests designed for monolingual children, and the clinician interprets the score without taking into account the fact that only a portion of the bilingual child's language knowledge is represented in that score. Underdiagnosis occurs when a bilingual child scores below monolingual norms and the clinician overcorrects for the child's bilingualism, thus failing to identify a child whose ability to acquire language is truly impaired. The problem is knowing how much to correct for the child's exposure to another language, and that problem is particularly difficult because the amount of exposure to another language varies among bilingual children. As a solution for bilingual children younger than 30 months, we propose administering the MacArthur inventory in both languages, calculating a total vocabulary score minus phonologically similar forms and comparing that total vocabulary score to monolingual norms. Total vocabulary reflects what children have learned from all of their input, thus the relative amount of input in each language does not matter, and monolingual norms can be used.

The role of counselor to parents of bilingual children is difficult because those parents face real challenges that have no easy solutions. Acquisition of a heritage language is a legitimate goal many parents have for their children, but it is not easy to sustain minority language use in the home and minority language development in children in the face of a dominant majority language culture. Acquisition of strong English language skills by school entry is another goal parents often and legitimately have for their children, but if both parents are immigrants for whom English is a late-acquired second language, providing an environment that supports early development of English skills may be challenging. Although the data do not point to an easy solution to this dilemma, the data do suggest two beliefs that parents (and

others) often hold are mistaken. The first widely held but mistaken belief is that children's ability to acquire language is such that once they get to school they will quickly reach the same level of English proficiency as their monolingual classmates, and thus early exposure to English is not necessary. To the contrary, the data are clear that poor English skills at school entry place a child at risk for school failure. Nationwide, the support programs provided to children from minority language homes help, but they do not close the gap.⁴⁷ The second widely held belief, which requires qualification, is that immigrant parents will help their children best by speaking English to them. The data are clear that language input provided by nonnative speakers is less supportive of language development than input provided by native speakers^{22,23}; the data show that in homes in which both parents are native speakers of Spanish, the negative effect of English use on children's Spanish skills is greater than the positive effect of English use on children's English skills.³⁵ The data are clear that an optimal environment for English language development is exposure rich, grammatically varied English of the sort that is characteristic of educated, native English speakers. Clinicians can provide minority language-speaking parents with this information, but providing all children access to such language experience will require involvement of larger institutions.

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REFERENCES

1. Hoff E. Language development in bilingual children. In: Bavin EL, Naigles L, eds. *The Cambridge Handbook of Child Language*. Cambridge, UK: Cambridge University Press, In press
2. McCabe A, Tamis-LeMonda C, Bornstein MH, et al. Multilingual children: beyond myths and towards best practices. *SRCD Social Policy Report* 2013;27(4):1-21

3. Volterra V, Taeschner T. The acquisition and development of language by bilingual children. *J Child Lang* 1978;5:311–326
4. Byers-Heinlein K, Burns TC, Werker JF. The roots of bilingualism in newborns. *Psychol Sci* 2010;21(3):343–348
5. Bosch L, Sebastian-Galles N. Evidence of early language discrimination abilities in infants from bilingual environments. *Infancy* 2001;2:29–49
6. Werker J. Perceptual foundations of bilingual acquisition in infancy. *Ann N Y Acad Sci* 2012; 1251:50–61
7. Fabiano-Smith L, Barlow JA. Interaction in bilingual phonological acquisition: evidence from phonetic inventories. *Int J Biling Educ Biling* 2010; 13(1):81–97
8. Lin LC, Johnson CJ. Phonological patterns in Mandarin-English bilingual children. *Clin Linguist Phon* 2010;24(4–5):369–386
9. Pearson BZ, Fernández SC, Oller DK. Lexical development in bilingual infants and toddlers: comparison to monolingual norms. *Lang Learn* 1993;43:93–120
10. Core C, Hoff E, Rumiche R, Señor M. Total and conceptual vocabulary in Spanish-English bilinguals from 22 to 30 months: implications for assessment. *J Speech Lang Hear Res* 2013;56(5): 1637–1649
11. Markman EM, Wasow JL, Hansen MB. Use of the mutual exclusivity assumption by young word learners. *Cognit Psychol* 2003;47(3):241–275
12. Meisel JM. Early differentiation of languages in bilingual children. In: Hyltenstam K, Obler LK, eds. *Bilingualism across the Lifespan: Aspects of Acquisition, Maturity, and Loss*. Cambridge, UK: Cambridge University Press; 1989:13–40
13. Toribio AJ. Code-switching among US Latinos. In: Diaz-Socios M, eds. *The Handbook of Hispanic Sociolinguistics*. Oxford, UK: Blackwell Publishing, Ltd.; 2011:530–552
14. Genesee F. Early bilingual development: one language or two? *J Child Lang* 1989;16(1):161–179
15. Genesee F, Nicoladis E. Bilingual first language acquisition. In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development*. West Sussex, UK: Wiley-Blackwell; 2007:324–342
16. Lanza E. Bilingual first language acquisition: a discourse perspective on language contact in parent-child interaction. In: Cenoz J, Genesee F, eds. *Trends in bilingual acquisition*. Amsterdam, the Netherlands: John Benjamins Publishing Co.; 2001:95–106
17. Nicoladis E, Genesee F. A longitudinal study of pragmatic differentiation in young bilingual children. *Lang Learn* 1996;46:439–464
18. Hoff E, Core C, Place S, Rumiche R, Señor M, Parra M. Dual language exposure and early bilingual development. *J Child Lang* 2012;39(1):1–27
19. Bosch L, Ramon-Casas M. First translation equivalents in bilingual toddlers' expressive vocabulary: does form similarity matter? *Int J Behav Dev* 2014; 38:317–322
20. De Houwer A. Parental language input patterns and children's bilingual use. *Appl Psycholinguist* 2007;28:411–422
21. Goodz N. Parental language mixing in bilingual families. *Infant Ment Health J* 1989;10:25–44
22. Place S, Hoff E. Properties of dual language exposure that influence 2-year-olds' bilingual proficiency. *Child Dev* 2011;82(6):1834–1849
23. Hoff E, Welsh S, Place S, Ribot KM. Properties of dual language input that shape bilingual development and properties of environments that shape dual language input. In: Grüter T, Paradis J, eds. *Input and Experience in Bilingual Development*. Amsterdam, the Netherlands: John Benjamins Publishing Co.; 2013
24. Byers-Heinlein K. Parental language mixing: its measurement and the relation of mixed input to young bilingual children's vocabulary size. *Biling Lang Cogn* 2013;16:32–48
25. Bialystok E, Feng X. Language proficiency and its implications for monolingual and bilingual children. In: Durgunoğlu AY, Goldenberg C, eds. *Language and Literacy Development in Bilingual Settings*. New York, NY: Guilford Publications, Inc.; 2011:121–138
26. Bialystok E, Luk G, Peets KF, Yang S. Receptive vocabulary differences in monolingual and bilingual children. *Biling Lang Cogn* 2010;13:525–531
27. Gathercole VCM, Thomas EM. Bilingual first-language development: dominant language take-over, threatened minority language take-up. *Biling Lang Cogn* 2009;12(2):213–237
28. Marchman VA, Fernald A, Hurtado N. How vocabulary size in two languages relates to efficiency in spoken word recognition by young Spanish-English bilinguals. *J Child Lang* 2010;37(4):817–840
29. Silvén M, Voeten M, Kouvo A, Lundén M. Speech perception and vocabulary growth: a longitudinal study of Finnish-Russian bilinguals and Finnish monolinguals from infancy to three years. *Int J Behav Dev* 2014;38:323–332
30. Vagh SB, Pan BA, Mancilla-Martinez J. Measuring growth in bilingual and monolingual children's English productive vocabulary development: the utility of combining parent and teacher report. *Child Dev* 2009;80(5):1545–1563
31. Hoff E, Core C. Input and language development in bilingually developing children. *Semin Speech Lang* 2013;34(4):215–226
32. Oller DK, Pearson BZ, Cobo-Lewis AB. Profile effects in early bilingual language and literacy. *Appl Psycholinguist* 2007;28(2):191–230
33. Paradis J, Kirova A. English second language learners in preschool: profile effects in their

- English abilities and the role of home language environment. *Int J Behav Dev* 2014;38(4):342–349
34. Ribot KM, Hoff E. “¿Cómo estas?” “I’m good.” Conversational code-switching is related to profiles of expressive and receptive proficiency in Spanish-English bilingual toddlers. *Int J Behav Dev* 2014;38(4):333–341
 35. Hoff E, Rumiche R, Burrige A, Ribot KM, Welsh SN. Expressive vocabulary development in children from bilingual and monolingual homes: a longitudinal study from two to four years. *Early Child Res Q* 2014;29(4):433–444
 36. Pettito LA, Katerelos M, Levy BG, Gauna K, Tétréault K, Ferraro V. Bilingual signed and spoken language acquisition from birth: implications for the mechanisms underlying early bilingual language acquisition. *J Child Lang* 2001;28(2):453–496
 37. Bialystok E. *Bilingualism in Development: Language, Literacy, and Cognition*. Cambridge, UK: Cambridge University Press; 2001
 38. Pearson B, Fernández SC, Lewedeg V, Oller DK. The relation of input factors to lexical learning by bilingual infants. *Appl Psycholinguist* 1997;18:41–58
 39. DeAnda S, Arias-Trejo N, Poulin-Dubois D, Zesiger P, Friend M. Minimal second language exposure, SES, and early word comprehension: new evidence from a direct assessment. *Biling Lang Cogn*, In press
 40. Pearson BZ. Social factors in childhood bilingualism in the United States. *Appl Psycholinguist* 2007;28(3):399–410
 41. Fenson L, Marchman VA, Thal DJ, Dale PS, Reznick JS, Bates E. *The MacArthur Communicative Development Inventories: User’s Guide and Technical Manual*. 2nd ed. Baltimore, MD: Paul H. Brookes; 2007
 42. Jackson-Maldonado D, Thal DJ, Fenson L, Marchman VA, Newton T, Conboy B. *El inventario del desarrollo de habilidades comunicativas: User’s Guide and Technical Manual*. Baltimore, MD: Paul H. Brookes; 2003
 43. Goodwin S, Core C, Hoff E. Predicting 48-month PPVT scores in young Spanish-English bilinguals. Poster presented at the Annual Convention of the American Speech-Language-Hearing Association. Atlanta, GA; November 2012
 44. Bedore LM, Peña ED, García M, Cortez C. Conceptual versus monolingual scoring: when does it make a difference? *Lang Speech Hear Serv Sch* 2005;36(3):188–200
 45. Gross M, Buac M, Kaushanskaya M. Conceptual scoring of receptive and expressive vocabulary measures in simultaneous and sequential bilingual children. *Am J Speech Lang Pathol* 2014;23(4):574–586
 46. Halle T, Hair E, Wandner L, McNamara M, Chien N. Predictors and outcomes of early versus later English language proficiency among English language learners. *Early Child Res Q* 2012;27(1):1–20
 47. Han WJ. Bilingualism and academic achievement. *Child Dev* 2012;83(1):300–321
 48. Kieffer MJ. Early oral language and later reading development in Spanish-speaking English language learners: evidence from a nine-year longitudinal study. *J Appl Dev Psychol* 2012;33:146–157
 49. Lonigan CJ, Farver JM, Nakamoto J, Eppe S. Developmental trajectories of preschool early literacy skills: a comparison of language-minority and monolingual-English children. *Dev Psychol* 2013;49(10):1943–1957
 50. Bialystok E, Peets KF. Bilingualism and cognitive linkages: learning to read in different languages. In: Shatz M, Wilkinson LC, eds. *The Education of English Language Learners: Research to Practice*. New York, NY: The Guilford Press; 2010:133–151
 51. Gibson TA, Oller DK, Jarmulowicz L, Ethington CA. The receptive-expressive gap in the vocabulary of young second-language learners: robustness and possible mechanisms. *Biling (Camb Engl)* 2012;15(1):102–116
 52. Grüter T, Hurtado N, Marchman VA, Fernald A. Language exposure and online processing efficiency in bilingual development: relative versus absolute measures. In: Grüter T, Paradis J, eds. *Input and Experience in Bilingual Development*. Amsterdam, the Netherlands: John Benjamins Publishing Co.; 2014:15–36
 53. Hoff E. How social contexts support and shape language development. *Dev Rev* 2006;26(1):55–88
 54. Huttenlocher J, Haight W, Bryk A, Seltzer M, Lyons T. Early vocabulary growth: relation to language input and gender. *Dev Psychol* 1991;27:236–248
 55. Rowe ML. A longitudinal investigation of the role of quantity and quality of child-directed speech in vocabulary development. *Child Dev* 2012;83(5):1762–1774
 56. Patterson J, Pearson B. Bilingual lexical development: influences, contexts, and processes. In: Goldstein B, eds. *Bilingual Language Development and Disorders in Spanish-English Speakers*. Baltimore, MD: Paul H. Brookes; 2004:77–104
 57. Song L, Tamis-Lemonda CS, Yoshikawa H, Kahana-Kalman R, Wu I. Language experiences and vocabulary development in Dominican and Mexican infants across the first 2 years. *Dev Psychol* 2012;48(4):1106–1123
 58. Gollan TH, Starr J, Ferreira VS. More than use it or lose it: the number-of-speakers effect on heritage

- language proficiency. *Psychon Bull Rev* 2015; 22(1):147–155
59. Paradis J. Individual differences in child English second language acquisition: comparing child-internal and child-external factors. *Linguistic Approaches to Bilingualism* 2011;1:213–237
 60. Hammer CS, Hoff E, Uchikoshi Y, Gillanders C. The language and literacy development of young dual language learners: a critical review. *Early Child Res Quarterly* 2014;29(4):715–733
 61. Hoff E, Coard W, Señor M. Bilingual parents' child-directed speech in two languages. Poster presented to the meetings of the Society for Research in Child Development, Seattle, WA; April 18–20 2013
 62. Oh JS, Fuligni AJ. The role of heritage language development in the ethnic identity and family relationships of adolescents from immigrant backgrounds. *Soc Dev* 2010;19(1):202–220
 63. Tseng V, Fuligni AJ. Parent-adolescent language use and relationships among immigrant families with East Asian, Filipino, and Latin American backgrounds. *J Marriage Fam* 2000;62(2):465–476
 64. Winsler A, Burchinal MR, Tien H-C. Early development among dual language learners: the roles of language use at home, maternal immigration, country of origin, and socio-demographic variables. *Early Child Res Quarterly* 2014;29(4):750–764
 65. Oller DK, Eilers R, Eds. *Language and Literacy in Bilingual Children*. Clevedon, UK: Multilingual Matters; 2002
 66. Goldenberg C, Reese L, Rezaei A. Contexts for language and literacy development among dual-language learners. In: Durgunoğlu AY, Goldenberg C, eds. *Language and Literacy Development in Bilingual Settings*. New York, NY: Guilford Publications, Inc.; 2011:3–28
 67. Bridges K, Hoff E. Older sibling influences on the language environment and language development of toddlers in bilingual homes. *Appl Psycholinguist* 2014;35(2):225–241