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Broadening horizons: 25 years of advancing cognitive development research through linguistic and cultural diversity

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Over the past 25 years, research in cognitive development has begun to embrace linguistic and cultural diversity. For example, the field has begun to move away from focusing on predominantly WEIRD, English-speaking populations, and rather, moved toward including historically underrepresented groups. The field has also transitioned from deficit perspectives of linguistic and cultural diversity to embrace an asset-based model in which differences from the “norm” in cognitive development are viewed as strengths. Additionally, more continuous representations of linguistic and cultural diversity often complement the more traditional, binary conceptualizations of linguistic (e.g., monolingual vs. bilingual) and cultural (e.g., Eastern vs. Western) backgrounds. Through these more representative accounts of our heterogeneous society, we have gained valuable insights into the development of cognitive processes in children. This mini review will summarize recent research findings in sub-disciplines of cognitive development, including attention, perception, executive function, and language, that were made possible by including linguistically and culturally diverse populations. We also identify future challenges related to systematic measurement and assessment of multilingualism and culture. We conclude by discussing the way forward, including large-scale collaborative efforts in developmental research (e.g., ManyBabies, Wordbank).

KEYWORDS

bilingualism, cognitive development, linguistic and cultural diversity, multilingualism, WEIRD

Introduction

The last 25 years has seen the field of cognitive development truly begin to embrace linguistic and cultural diversity in its research. Where monolingual, White participants from WEIRD (Western, Educated, Industrial, Rich, Democratic) cultures were largely the unspoken—and often, unreported—“norm” (e.g., [Singh et al., 2023](#)), the field has made concerted efforts to better characterize individual differences in participants’ backgrounds and encourage the inclusion of linguistically and culturally diverse participants (e.g., [Byers-Heinlein et al., 2019](#)). The field also began to move away from binary approaches to “inclusion”—in which the “normative” group was viewed as a control group against which the “other” group could be compared (e.g., Western vs. Eastern; monolingual vs.

bilingual; native speaker vs. non-native speaker)—to one that understands linguistic and cultural diversity as existing on spectra (e.g., Kremin and Byers-Heinlein, 2021; Luk, 2023; Luk and Bialystok, 2013; Singh, 2024; Takahesu Tabori et al., 2018; Tamis-LeMonda et al., 2008; Vulchanova et al., 2022). This more linguistically- and culturally-equitable conceptualization has led to an appreciation for individual differences, to replace the deficit perspectives that were still prevalent just a quarter century ago. Moreover, this inclusive approach to cognitive development research has also produced new discoveries in basic science—as well as the development of new theoretical frameworks—all of which are beginning to have practical implications in our global world.

This mini review aims to illuminate the ways in which including linguistically and culturally diverse populations in cognitive development research over the last 25 years has broadened our understanding of various aspects of cognitive development. In the following sections, we briefly review four areas of cognitive development research—visual attention, perception, executive function, and language—that have been transformed by the inclusion of linguistically and culturally diverse populations. We focus our review on the past 25 years, synthesizing major findings from notable empirical work, meta-analyses, and review articles; where available, we also reference less-cited empirical work that include underrepresented samples. We also discuss challenges the field may face moving forward and our recommendations to fellow cognitive developmental scientists as we continue to advance our understanding of cognitive development.

New insights in cognitive development

Visual attention

Studies examining bilingual infants and children have found their pattern of visual attention to differ from those of their monolingual counterparts. Compared to monolingual infants, bilingual infants tend to look longer at the mouth than eyes (Ayneto and Sebastian-Galles, 2017; Pons et al., 2015), and over the course of the first postnatal year, continue to visually attend to the mouth over eyes (Morin-Lessard et al., 2019; Tsang et al., 2018). Similarly, bilingual children show protracted attention to the mouth region of a face that continues beyond their first birthday and into school-age (Birulés et al., 2019; Fort et al., 2017; Morin-Lessard et al., 2019; Pons et al., 2019), whereas monolingual children show a more equal distribution of attention between eyes and mouths by the time children are school-age (e.g., Morin-Lessard et al., 2019). However, different patterns of visual attention to the face have been found for bimodal bilingual infants (i.e., hearing infants with a Deaf parent), suggesting that it is not only language input but also speech input that shapes visual attention (e.g., Mercure et al., 2019, 2018). Together, these findings illustrate how exposure to more than one language early in life may shape the way that infants and children visually attend to faces in their environment. By examining infants and young children from different bilingual environments, it has been possible to develop a more nuanced understanding of the ways in which language environments shape visual attention

early in postnatal life. However, future research on this topic must include a more globally-representative sample of monolingual and bilingual infants.

Perception

Differences in the trajectory of perceptual development between monolingual and bilingual infants have also been reported (e.g., Byers-Heinlein and Fennell, 2014; Graf Estes and Hay, 2015; Hay et al., 2015; Petitto et al., 2012; Sebastián-Gallés et al., 2012; Singh et al., 2017; Weikum et al., 2007; for a review, see Höhle et al., 2020). For example, in the auditory domain, monolingually- and bilingually-exposed infants show similar speech sound discrimination abilities until around age 6 months (e.g., Bosch and Sebastián-Gallés, 2001; Byers-Heinlein et al., 2010; Sundara et al., 2008). However, variation in infants' developmental trajectories appear in the latter half of the first postnatal year, with monolingual infants' perceptual systems becoming “tuned” to the sounds of their native language, and bilingual infants' perceptual systems remaining more plastic and open to a larger variety of speech sounds (e.g., Bosch and Sebastián-Gallés, 2003; Ferjan Ramírez et al., 2017). Similar findings have been reported in the visual domain as well (e.g., Sebastián-Gallés et al., 2012; Weikum et al., 2007). However, these differences in developmental trajectories may begin even earlier in life, as newborns who were prenatally-exposed to one vs. two languages show different language preferences (Byers-Heinlein et al., 2010). It should be noted, though, that the vast majority of published studies on this topic were conducted in North America, Western Europe, and Australia—and largely focused on consonant discrimination—highlighting the continued need to not only include linguistically-, geographically-, and culturally-diverse populations of children in this line of work, but also examine different characteristics of speech and language (Kalashnikova et al., 2024; Singh, 2024; Singh et al., 2022). For instance, a multi-laboratory, transdisciplinary collaboration that examined a more globally-representative sample of 5- to 17-month-old monolinguals and bilinguals showed that both language background groups continue to discriminate tone contrasts in a language that they have not been exposed to (Kalashnikova et al., 2024). Thus, by examining infants with exposure to various linguistic environments, these studies not only shed light on the ways in which perceptual development may vary by language input but also informed theories on perceptual development (e.g., *Perceptual Wedge Hypothesis*: Petitto et al., 2012). Continuing to examine a more globally-representative sample of infants will contribute to a deeper, more accurate understanding of perceptual development.

Executive function

Bilingual infants and children have been found to outperform their monolingual peers in various tasks of executive functioning (for recent meta-analyses, see Planckaert et al., 2023; Yurtsever et al., 2023; for reviews, see Bialystok, 2017; Grundy, 2020; van den Noort et al., 2019). Although both “bilingual” and “executive

function” have been defined and measured in myriad ways (for a discussion of this issue, see Bialystok, 2021; Planckaert et al., 2023), bilingual infants (Kovács and Mehler, 2009a,b) and children (e.g., Barac and Bialystok, 2012; Bialystok and Feng, 2009; Bialystok and Martin, 2004; Carlson and Meltzoff, 2008; Engel de Abreu et al., 2012; Martin-Rhee and Bialystok, 2008; Morales et al., 2013; Poarch and Van Hell, 2012; Yoshida, 2008) have generally been found to outperform their monolingual peers in tasks measuring various aspects of executive function. However, some studies have also found monolinguals and bilinguals to perform similarly on executive function tasks (for a recent meta-analysis, see Lowe et al., 2021). Although this discrepancy in findings has sparked controversy (for a review, see Antoniou, 2019), it has also led to more nuanced methodological and analytic approaches in this area of research that, in turn, has led to the development of new theoretical frameworks in the interdisciplinary field of language science (e.g., *Adaptive Control Hypothesis*: Green and Abutalebi, 2013; *Attention Processing Account of Bilingualism*: Bialystok, 2015; *Systems Framework of Bilingualism*: Titone and Tiv, 2023). Additionally, some studies have used cross-cultural comparisons—comparing bilinguals and monolinguals from WEIRD cultures to those from non-WEIRD cultures (e.g., Asia, Latin America)—to begin to tease apart the role of bilingualism vs. culture on executive function and found bilingualism and culture to have differential effects on executive function (e.g., Bialystok and Viswanathan, 2009; Kang et al., 2016; Tran et al., 2015, 2019; Yang et al., 2011). Moreover, the general finding that bilingualism either benefits or has no effect on (but critically, does not *hurt*) cognitive functioning has shaped educational policy and public health initiatives to support bilingualism as well (e.g., Bialystok, 2018). This finding also bolstered support for four primarily Anglophone nations to call for political, educational, and economic action to promote multilingualism (American Academy of Arts and Sciences Commission on Language Learning, 2017; British Academy, 2019; British Academy, Arts and Humanities Research Council et al., 2020; British Academy, American Academy of Arts and Sciences et al., 2021).

Language

Vocabulary

Measuring bilingual children’s vocabulary in research and clinical settings has been a multifaceted, interdisciplinary challenge that has provided insight into the similarities and differences between monolingual and bilingual children’s lexicons. Most commonly used vocabulary assessments in research and clinical settings, such as the MacArthur-Bates Communicative Development Inventory (MCDI; Fenson et al., 2007), Peabody Picture Vocabulary Test (PPVT; Dunn and Dunn, 1997), and Expressive Vocabulary Test (EVT; Williams, 1997), were first created and normed for Standard American-English speakers. Despite subsequent adaptations in other languages (e.g., Mexican-Spanish CDI; Jackson-Maldonado et al., 2003), many of the existing vocabulary assessment tools today are available in *single* languages, which has often resulted in assessing bilingual children’s vocabulary in only one of their two languages. (When bilingual assessment

tools are available, they are often focused on specific language combinations, namely English and Spanish [e.g., *Bilingual English-Spanish Assessment*: Peña et al., 2018; *Receptive and Expressive One-Word Picture Vocabulary Tests – Spanish Bilingual Edition*: Brownell, 2000].) As such, bilingual children were found to lag behind their monolingual counterparts in the number of words that they know (e.g., Bialystok et al., 2010; Byers-Heinlein et al., 2024; Hoff and Ribot, 2017; Pearson et al., 1993; Thordardottir et al., 2006). However, when both languages are taken into account, including children’s knowledge of translation equivalents (words across two languages that share the same meaning; e.g., *dog* and *perro*), bilinguals’ total vocabulary is comparable to or exceeds that of monolinguals (e.g., Byers-Heinlein et al., 2024; Core et al., 2013; De Houwer et al., 2014; Hoff et al., 2012; Pearson et al., 1993). Although the inclusion of linguistically diverse groups in language acquisition research has led to a consensus that bilingual children should not be viewed through a monolingual-normative lens and that best practice for assessing bilinguals involves measuring *both* languages, there still lacks agreement in how *total vocabulary* is defined and measured across studies (see Weisleder et al., 2024 for a scoping review). Moreover, though this best practice may work in laboratory-settings, speech language pathologists in clinical settings face the challenge of diagnosing language disorders in bilingual children, sometimes without reliable assessment tools for either or both languages (e.g., Bedore and Peña, 2008; Thordardottir et al., 2006). Thus, it is necessary for researchers to explicitly describe their methodologies and work toward greater standardization of assessments in order for practitioners to then move toward developing more equitable clinical and educational practices.

Language socialization

Rooted in anthropology, language socialization emerged as a response to the lack of diverse cultural and linguistic representation in the field of first language acquisition and refers to the process whereby caregivers impart upon children socially acceptable and normative behaviors *through* adult-guided linguistic activities and *into* specific uses of language (Schieffelin and Ochs, 1986). Since its conception, language socialization research revealed patterns of parenting beliefs and childrearing practices that challenged traditionally-held Western- and Anglo-centric normative ideas of what children’s early language environments look like (e.g., Chiapas, Mexico: Casillas et al., 2020; Beni, Bolivia: Cristia et al., 2019; Mokhotlong, Lesotho: Loukatou et al., 2022; Lima, Peru: Melzi et al., 2011; Bangkok, Thailand: Rochanavibhata and Marian, 2020, 2021, 2022a; Beijing, China: Wang et al., 2000; for a review, see Rowe and Weisleder, 2020). For example, there are cultural differences in the degree to which dyadic interactions are child-centered (e.g., infant-directed speech: Casillas et al., 2020; Cristia et al., 2019; Loukatou et al., 2022; for a systematic review, see Cristia, 2023) and in the function that adults serve as communicative partners (e.g., scaffolding vs. regulating attention and action: Melzi et al., 2011; Rochanavibhata and Marian, 2020, 2021, 2022a; Tamis-LeMonda et al., 2012; Wang et al., 2000). Furthermore, the language socialization theoretical framework has been extended to studies of bilingualism, heritage language, and second language acquisition, particularly examining how

bilingual families scaffold their children's development differently using each of their languages (e.g., Chen et al., 2021; Hoff and Shanks, 2024; Mak et al., 2025; Rochanavibhata, 2022; Rochanavibhata et al., 2023; Rochanavibhata and Marian, 2024; Williams et al., 2020). The inclusion of families from culturally and linguistically diverse populations in this area has provided evidence that language development, like other domains of cognitive development, is influenced by children's communities and larger sociocultural contexts.

Future challenges and the way forward

Methodological and theoretical challenges

Bilingualism is a multidimensional, dynamic construct with many nested dimensions (e.g., Kroll and Bialystok, 2013; Luk and Bialystok, 2013), making it a complex construct to measure and assess. At the individual, child-level, bilingual children vary in their language ability in each language—which can be further divided into receptive vs. productive skills and spoken vs. written language skills; at the level of the immediate environment, children vary in the amount, type, and quality of input they receive in each language; and at the cultural and societal level, there are differences in how much bilingualism may be institutionally-supported (e.g., whether a country has an official language; in what language or combination of languages formal education is offered). All of these dimensions not only interact to shape a child's bilingualism, and presumably their cognition as well, but also change over time as the child develops and as environmental characteristics change.

One way to try to capture this complexity is to move beyond a monolingual vs. bilingual dichotomy to embrace more nuanced measures of bilingualism, in which we view bilingualism as a spectrum of language experiences, abilities, and environments (for a discussion on this topic, see Luk, 2023; Takahesu Tabori et al., 2018). Indeed, some have used speakers' language acquisition experiences to identify different types of bilinguals (e.g., Bilingual First Language Acquisition vs. Early Second Language Acquisition vs. Second Language Acquisition: De Houwer, 2021) and monolinguals (e.g., international adoptees who are monolingual in different languages pre- and post-adoption: Pierce et al., 2014, 2015, 2017; childhood overhearers: Au et al., 2002; Knightly et al., 2003). Others have called for the examination of bilingualism both as a categorical and continuous variable (e.g., Kremin and Byers-Heinlein, 2021), while still others have called for the development of a single measure of bilingualism (e.g., "bilingualism quotient." Marian and Hayakawa, 2021) that would capture the multidimensionality and dynamicity of bilingualism. Looking at the language environment, others have begun to assess characteristics of a child's immediate language environment (e.g., *Perceptions of Bilingualism for Child Scale*: Luk and Surrain, 2019), as well as more broadly characterize linguistic diversity by examining how multilingual environments may shape bilingual and monolingual children's language and cognitive development (e.g., Akhtar et al., 2012; Atagi and Sandhofer, 2020; Howard et al., 2014; Rojo and Echols, 2018). Although measuring and assessing bilingualism will remain a challenge moving forward,

the field is beginning to tackle this challenge to embrace a more comprehensive, inclusive view of human cognitive development.

Another way to capture the complexity in cognitive development is to use and develop frameworks that embrace complexity. Existing theories—such as Dynamic Systems Theory (Thelen and Smith, 1994) and Ecological Systems Theory (Bronfenbrenner, 1977)—can help situate our current understandings of cognitive development within broader frameworks in which a child's experiences, abilities, and environments are not only accounted for but also expected to change over time. Moreover, ideas from such theories can serve as foundations to develop new frameworks: in the interdisciplinary field of bilingualism, a Systems Framework of Bilingualism (Titone and Tiv, 2023) that combines ideas from Dynamic Systems and Ecological Systems Theories has been proposed as a way to capture the dynamic complexity of bilingual sociolinguistic experiences and advance the field. Additionally, theories like the Integrative Model for the Study of Developmental Competencies in Minority Children (Garcia Coll et al., 1996)—though also not new to the field of development—can provide inclusive frameworks that consider factors, like systems of oppression, that shape the development of children of color. Capitalizing on theoretical models that take into consideration the complexities of human experience and dynamicity of development will continue to advance the field of cognitive development.

Access to resources and funding support

Without the inclusion of linguistically and culturally diverse populations in cognitive development research, our current theories and policies are skewed toward predominantly monolingual English-speaking and WEIRD groups (Kidd and Garcia, 2022; Rochanavibhata and Marian, 2022b; Singh et al., 2023). There are currently multiple challenges for diversifying behavioral science research, including on cognitive development. Political changes can have dramatic impacts on research funding (e.g., Kozlov and Mallapaty, 2025), focus (e.g., Garisto and Kozlov, 2025), and training opportunities (e.g., Garisto, 2025). Such changes in the focus of a government, coupled with the disparity that persists in access to resources between the Global North and South, point to the need for the field to be *intentional* in its work increasing the inclusion and representation of understudied languages, cultures, and populations. Moreover, to continue moving the field forward and shape policy in meaningful, relevant ways, new generations of scientists—who represent a variety of backgrounds and perspectives—are needed.

Data sharing and mass collaboration

In a more globalized and online world, there is an opportunity for us to close the inequality gap by utilizing the technological advances of the last 25 years, specifically data sharing and mass collaboration. Data sharing in developmental research is not a new idea. In 1985, Brian MacWhinney and Catherine Snow created the Child Language Data Exchange System (CHILDES;

MacWhinney and Snow, 1985) as a central repository for data of language acquisition. As of 2022, CHILDES has data for 45 spoken languages across its monolingual and multilingual corpora (Kidd and Garcia, 2022). Recent efforts to create databases of child data have increased and resulted in libraries such as Databrary (Gilmore et al., 2016). One of the biggest benefits of data sharing is the ability for researchers outside of the Global North to have access to and perform secondary analyses on previously collected data. We recognize, however, that this does not address the lack of diversity in the linguistic and cultural backgrounds covered in developmental research. There still needs to be a push toward including collaborators from different geographical locations and traditionally underrepresented institutions. For example, to address the issue of diversity in samples and scientists, Frank and colleagues created ManyBabies (Frank et al., 2017a): a global consortium where methodologies and data are shared, allowing for mass collaboration and more large-scale online testing. ManyBabies currently spans 47 countries and over 200 institutions (<https://many-babies.github.io/>). Similarly, Wordbank (<https://wordbank.stanford.edu/>) is an open database with MCDI data from around the world (Frank et al., 2017b). Mass collaboration efforts like ManyBabies and Wordbank have various beneficial functions, including addressing the replicability crisis, standardizing stimuli and methodologies, and fostering open science (Visser et al., 2022). Moreover, such collaborative efforts can foster the development of new, more inclusive tools, such as the *Dual Language Learners English-Spanish (DLL-ES) Inventories* (Tamis-LeMonda et al., 2024)—one of few tools available for measuring language development in bilingual children. However, an inequity challenge that is inherent to any collaboration, but especially international collaboration, is power imbalance, particularly between researchers from low/middle-income countries and high-income countries (Singh, 2024; Singh et al., 2023). Thus, it is important for scientists to be cognizant of the power structure in their group in order to not further perpetuate problematic practices.

In addition to mass collaboration between developmental scientists, another potential next step for the field is to increase transdisciplinary collaborations across anthropology, education, linguistics, neuroscience, sociology, and speech language pathology. As this mini review illustrates, many of these intersectionalities already exist (e.g., expertise from education, linguistics, and speech language pathology intersect to create evidence-based practices for measuring linguistic abilities and diagnosing language disorders). However, it is necessary to continue expanding these cross-pollinations in innovative ways, such as examining the neural underpinnings of translanguaging in naturalistic classroom contexts (Leon Guerrero and Luk, 2021; Weimer et al., 2019).

References

Akhtar, N., Menjivar, J., Hoicka, E., and Sabbagh, M. A. (2012). Learning foreign labels from a foreign speaker: the role of (limited) exposure to a second language. *J. Child Lang.* 39, 1135–1149. doi: 10.1017/S0305000911000481

Conclusions

Research in the field of cognitive development has gained much by taking a more linguistically- and culturally-inclusive approach. Though there will be challenges and obstacles in the years ahead to continuing this inclusive approach, a collaborative effort across laboratories, disciplines, and countries will allow us to formulate theories and discover new insights that more accurately reflect the diversity and complexity of the human experience. Such globally-collaborative efforts can, in turn, inform educational, clinical, and social practice and policy that support inclusion in an evidence-based manner and shape the everyday lives of real children in all parts of the world.

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American Academy of Arts and Sciences Commission on Language Learning. (2017). *America's Languages: Investing in Language Education for the 21st Century*. Cambridge, MA: American Academy of Arts and Sciences.

- Antoniou, M. (2019). The advantages of bilingualism debate. *Ann. Rev. Ling.* 5, 395–415. doi: 10.1146/annurev-linguistics-011718-011820
- Atagi, N., and Sandhofer, C. M. (2020). Early language environments predict aspects of explicit language awareness development. *Lang. Learn.* 70, 464–505. doi: 10.1111/lang.12381
- Au, T. K. F., Knightly, L. M., Jun, S. A., and Oh, J. S. (2002). Overhearing a language during childhood. *Psychol. Sci.* 13, 238–243. doi: 10.1111/1467-9280.00444
- Ayneto, A. Sebastian-Galles, N. (2017). The influence of bilingualism on the preference for the mouth region of dynamic faces. *Dev. Sci.* 20:e12446. doi: 10.1111/desc.12446
- Barac, R., and Bialystok, E. (2012). Bilingual effects on cognitive and linguistic development: role of language, cultural background, and education. *Child Dev.* 83, 413–422. doi: 10.1111/j.1467-8624.2011.01707.x
- Bedore, L. M., and Peña, E. D. (2008). Assessment of bilingual children for identification of language impairment: current findings and implications for practice. *Int. J. Bilingual Educ. Bilingualism* 11, 1–29. doi: 10.2167/beb392.0
- Bialystok, E. (2015). Bilingualism and the development of executive function: the role of attention. *Child Dev. Perspect.* 9, 117–121. doi: 10.1111/cdep.12116
- Bialystok, E. (2017). The bilingual adaptation: how minds accommodate experience. *Psychol. Bull.* 143, 233–262. doi: 10.1037/bul0000099
- Bialystok, E. (2018). Bilingual education for young children: review of the effects and consequences. *Int. J. Biling. Educ. Bilingualism* 21, 666–679. doi: 10.1080/13670050.2016.1203859
- Bialystok, E. (2021). Bilingualism as a slice of Swiss cheese. *Front. Psychol.* 12:769323. doi: 10.3389/fpsyg.2021.769323
- Bialystok, E., and Feng, X. (2009). Language proficiency and executive control in proactive interference: evidence from monolingual and bilingual children and adults. *Brain Lang.* 109, 93–100. doi: 10.1016/j.bandl.2008.09.001
- Bialystok, E., Luk, G., Peets, K. F., and Yang, S. (2010). Receptive vocabulary differences in monolingual and bilingual children. *Biling. Lang. Cognit.* 13, 525–531. doi: 10.1017/S1366728909990423
- Bialystok, E., and Martin, M. M. (2004). Attention and inhibition in bilingual children: evidence from the dimensional change card sort task. *Dev. Sci.* 7, 325–339. doi: 10.1111/j.1467-7687.2004.00351.x
- Bialystok, E., and Viswanathan, M. (2009). Components of executive control with advantages for bilingual children in two cultures. *Cognition* 112, 494–500. doi: 10.1016/j.cognition.2009.06.014
- Birulés, J., Bosch, L., Briek, R., Pons, F., and Lewkowicz, D. J. (2019). Inside bilingualism: language background modulates selective attention to a talker's mouth. *Dev. Sci.* 22:e12755. doi: 10.1111/desc.12755
- Bosch, L., and Sebastián-Gallés, N. (2001). Evidence of early language discrimination abilities in infants from bilingual environments. *Infancy* 2, 29–49. doi: 10.1207/S15327078IN0201_3
- Bosch, L., and Sebastián-Gallés, N. (2003). Simultaneous bilingualism and the perception of a language-specific vowel contrast in the first year of life. *Lang. Speech* 46, 217–243. doi: 10.1177/00238309030460020801
- British Academy, American Academy of Arts and Sciences, Australian Academy of the Humanities, Academy of the Social Sciences in Australia, and The Royal Society of Canada. (2021). The importance of languages in global context: an international call to action. *Eur. J. Lang. Policy* 13, 104–107. doi: 10.3828/ejlp.2021.7a
- British Academy, Arts and Humanities Research Council, Association of School and College Leaders, British Council, Universities UK. (2020). *Towards a National Languages Strategy: Education and Skills*. London: British Academy.
- British Academy. (2019). *Languages in the UK: A Call for Action*. London: British Academy.
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *Am. Psychol.* 32, 513–531. doi: 10.1037/0003-066X.32.7.513
- Brownell, R. (2000). *Receptive and Expressive One-Word Picture Vocabulary Tests—Spanish-Bilingual Edition*. Novato, CA: Academic Therapy Publications.
- Byers-Heinlein, K., Burns, T. C., and Werker, J. F. (2010). The roots of bilingualism in newborns. *Psychol. Sci.* 21, 343–348. doi: 10.1177/0956797609360758
- Byers-Heinlein, K., Esposito, A. G., Winsler, A., Marian, V., Castro, D. C., Luk, G., et al. (2019). The case for measuring and reporting bilingualism in developmental research. *Collabra Psychol.* 5:37. doi: 10.1525/collabra.233
- Byers-Heinlein, K., Fennell, C. T. (2014). Perceptual narrowing in the context of increased variation: insights from bilingual infants. *Dev. Psychobiol.* 56, 274–291. doi: 10.1002/dev.21167
- Byers-Heinlein, K., Gonzalez-Barrero, A. M., Schott, E., and Killam, H. (2024). Sometimes larger, sometimes smaller: measuring vocabulary in monolingual and bilingual infants and toddlers. *First Lang.* 44, 74–95. doi: 10.1177/01427237231204167
- Carlson, S. M., and Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Dev. Sci.* 11, 282–298. doi: 10.1111/j.1467-7687.2008.00675.x
- Casillas, M., Brown, P., and Levinson, S. C. (2020). Early language experience in a Tzeltal Mayan village. *Child Dev.* 91, 1819–1835. doi: 10.1111/cdev.13349
- Chen, S. H., Zhou, Q., and Uchikoshi, Y. (2021). Heritage language socialization in Chinese American immigrant families: prospective links to children's heritage language proficiency. *Int. J. Biling. Educ. Biling.* 24, 1193–1209. doi: 10.1080/13670050.2018.1547680
- Core, C., Hoff, E., Rumiche, R., and Señor, M. (2013). Total and conceptual vocabulary in Spanish-English bilinguals from 22 to 30 months: implications for assessment. *J. Speech Lang. Hear. Res.* 56, 1637–1649. doi: 10.1044/1092-4388(2013/11-0044)
- Cristia, A. (2023). A systematic review suggests marked differences in the prevalence of infant-directed vocalization across groups of populations. *Dev. Sci.* 26:e13265. doi: 10.1111/desc.13265
- Cristia, A., Dupoux, E., Gurven, M., and Stieglitz, J. (2019). Child-directed speech is infrequent in a forager-farmer population: a time allocation study. *Child Dev.* 90, 759–773. doi: 10.1111/cdev.12974
- De Houwer, A. (2021). *Bilingual Development in Childhood*. Cambridge: Cambridge University Press. doi: 10.1017/9781108866002
- De Houwer, A., Bornstein, M. H., and Putnick, D. L. (2014). A bilingual-monolingual comparison of young children's vocabulary size: evidence from comprehension and production. *Appl. Psychol.* 35, 1189–1211. doi: 10.1017/S0142716412000744
- Dunn, L. M., and Dunn, L. M. (1997). *PPVT-III: Peabody Picture Vocabulary Test*. Circle Pines, MN: American Guidance Service.
- Engel de Abreu, P. M., Cruz-Santos, A., Tourinho, C. J., Martin, R., and Bialystok, E. (2012). Bilingualism enriches the poor: enhanced cognitive control in low-income minority children. *Psychol. Sci.* 23, 1364–1371. doi: 10.1177/0956797612443836
- Fenson, L., Marchman, V., Thal, D., Dale, P., Reznick, S., Bates, E., et al. (2007). *MacArthur Communicative Development Inventories: User's guide and technical manual, 2nd Edn*. Baltimore, MD: Paul H. Brookes. doi: 10.1037/t11538-000
- Ferjan Ramirez, N., Ramirez, R. R., Clarke, M., Taulu, S., and Kuhl, P. K. (2017). Speech discrimination in 11-month-old bilingual and monolingual infants: a magnetoencephalography study. *Dev. Sci.* 20:e12427. doi: 10.1111/desc.12427
- Fort, M., Ayneto-Gimeno, A., Escrichs, A., and Sebastian-Galles, N. (2017). Impact of bilingualism on infants' ability to learn from talking and nontalking faces. *Lang. Learn.* 68, 31–57. doi: 10.1111/lang.12273
- Frank, M. C., Bergelson, E., Bergmann, C., Cristia, A., Floccia, C., Gervain, J., et al. (2017a). A collaborative approach to infant research: promoting reproducibility, best practices, and theory-building. *Infancy* 22, 421–435. doi: 10.1111/inf.12182
- Frank, M. C., Braginsky, M., Yurovsky, D., and Marchman, V. A. (2017b). Wordbank: an open repository for developmental vocabulary data. *J. Child Lang.* 44, 677–694. doi: 10.1017/S0305000916000209
- Garcia Coll, C., Crnic, K., Lamberty, G., Wasik, B. H., Jenkins, R., Garcia, H. V., et al. (1996). An integrative model for the study of developmental competencies in minority children. *Child Dev.* 67, 1891–1914. doi: 10.2307/1131600
- Garisto, D. (2025). US universities curtail PhD admissions amid Trump science funding cuts. *Nature*. doi: 10.1038/d41586-025-00608-z. [Epub ahead of print].
- Garisto, D., and Kozlov, M. (2025). Exclusive: how NSF is scouring research grants for violations of Trump's orders. *Nature*. doi: 10.1038/d41586-025-00365-z. [Epub ahead of print].
- Gilmore, R. O., Adolph, K. E., and Millman, D. S. (2016). "Curating identifiable data for sharing: the Databrary project," in *2016 New York Scientific Data Summit* (Piscataway, NJ: IEEE), 1–6. doi: 10.1109/NYSDS.2016.7747817
- Graf Estes, K., and Hay, J. F. (2015). Flexibility in bilingual infants' word learning. *Child Dev.* 86, 1371–1385. doi: 10.1111/cdev.12392
- Green, D. W., and Abutalebi, J. (2013). Language control in bilinguals: the adaptive control hypothesis. *J. Cognit. Psychol.* 25, 515–530. doi: 10.1080/20445911.2013.796377
- Grundy, J. G. (2020). The effects of bilingualism on executive functions: an updated quantitative analysis. *J. Cult. Cognit. Sci.* 4, 177–199. doi: 10.1007/s41809-020-00062-5
- Hay, J. F., Graf Estes, K., Wang, T., and Saffran, J. R. (2015). From flexibility to constraint: the contrastive use of lexical tone in early word learning. *Child Dev.* 86, 10–22. doi: 10.1111/cdev.12269
- Hoff, E., Core, C., Place, S., Rumiche, R., Señor, M., Parra, M., et al. (2012). Dual language exposure and early bilingual development. *J. Child Lang.* 39, 1–27. doi: 10.1017/S0305000910000759
- Hoff, E., and Ribot, K. M. (2017). Language growth in English monolingual and Spanish-English bilingual children from 2.5 to 5 years. *J. Pediatr.* 190, 241–245. doi: 10.1016/j.jpeds.2017.06.071

- Hoff, E., and Shanks, K. F. (2024). Mother-child conversations of latina immigrant and US-Born mothers in the United States. *J. Cross Cult. Psychol.* 55, 74–94. doi: 10.1177/00220221231212420
- Höhle, B., Bijeljic-Babic, R., and Nazzi, T. (2020). Variability and stability in early language acquisition: comparing monolingual and bilingual infants' speech perception and word recognition. *Biling. Lang. Cognit.* 23, 56–71. doi: 10.1017/S1366728919000348
- Howard, L. H., Carrazza, C., and Woodward, A. L. (2014). Neighborhood linguistic diversity predicts infants' social learning. *Cognition* 133, 474–479. doi: 10.1016/j.cognition.2014.08.002
- Jackson-Maldonado, D., Thal, D., Marchman, V., Newton, T., Fenson, L., Conboy, B., et al. (2003). *Mac Arthur Inventarios del Desarrollo de Habilidades Comunicativas. User's Guide and Technical Manual*. Baltimore, MD: Paul H. Brookes.
- Kalashnikova, M., Singh, L., Tsui, A., Altuntas, E., Burnham, D., Cannistraci, R., et al. (2024). The development of tone discrimination in infancy: evidence from a cross-linguistic, multi-lab report. *Dev. Sci.* 27:e13459. doi: 10.1111/desc.13459
- Kang, C., Thoenes, F., and Lust, B. (2016). Effects of SES on executive attention in Malay-English bilingual children in Singapore. *Biling. Lang. Cognit.* 19, 1042–1056. doi: 10.1017/S1366728915000437
- Kidd, E., and Garcia, R. (2022). How diverse is child language acquisition research?. *First Lang.* 42, 703–735. doi: 10.1177/01427237211066405
- Knightly, L. M., Jun, S. A., Oh, J. S., and Au, T. K. F. (2003). Production benefits of childhood overheard. *J. Acoust. Soc. Am.* 114, 465–474. doi: 10.1121/1.1577560
- Kovács, Á. M., and Mehler, J. (2009a). Cognitive gains in 7-month-old bilingual infants. *Proc. Natl. Acad. Sci.* 106, 6556–6560. doi: 10.1073/pnas.0811323106
- Kovács, Á. M., and Mehler, J. (2009b). Flexible learning of multiple speech structures in bilingual infants. *Science* 325, 611–612. doi: 10.1126/science.1173947
- Kozlov, M., and Mallapaty, S. (2025). Exclusive: NIH to terminate hundreds of active research grants. *Nature* 639, 281–282. doi: 10.1038/d41586-025-00703-1
- Kremin, L. V., and Byers-Heinlein, K. (2021). Why not both? Rethinking categorical and continuous approaches to bilingualism. *Int. J. Biling.* 25, 1560–1575. doi: 10.1177/13670069211031986
- Kroll, J. F., and Bialystok, E. (2013). Understanding the consequences of bilingualism for language processing and cognition. *J. Cognit. Psychol.* 25, 497–514. doi: 10.1080/20445911.2013.799170
- Leon Guerrero, S., and Luk, G. (2021). *Synergetic Themes in Cognitive and Sociocultural Bilingualism Research: Moving Towards a Transdisciplinary Approach*. New York, NY: Routledge. doi: 10.4324/9781003152194-3
- Loukatou, G., Scaff, C., Demuth, K., Cristia, A., and Havron, N. (2022). Child-directed and overheard input from different speakers in two distinct cultures. *J. Child Lang.* 49, 1173–1192, S0305000921000623. doi: 10.1017/S0305000921000623
- Lowe, C. J., Cho, I., Goldsmith, S. F., and Morton, J. B. (2021). The bilingual advantage in children's executive functioning is not related to language status: a meta-analytic review. *Psychol. Sci.* 32, 1115–1146. doi: 10.1177/0956797621993108
- Luk, G. (2023). Justice and equity for whom? Reframing research on the “bilingual (dis) advantage”. *Appl. Psychol.* 44, 301–315. doi: 10.1017/S0142716422000339
- Luk, G., and Bialystok, E. (2013). Bilingualism is not a categorical variable: interaction between language proficiency and usage. *J. Cognit. Psychol.* 25, 605–621. doi: 10.1080/20445911.2013.795574
- Luk, G., and Surraín, S. (2019). The perceptions of bilingualism scales. *PsyArXiv [Preprint]*. doi: 10.31234/osf.io/s32zb
- MacWhinney, B., and Snow, C. (1985). The child language data exchange system. *J. Child Lang.* 12, 271–295. doi: 10.1017/S0305000900006449
- Mak, E., Mauer, E., Luo, R., Zhou, Q., and Uchikoshi, Y. (2025). Cognitive demand in parent-child shared book reading and home language development among dual language learners in low-income immigrant families. *Int. J. Bilingual.* 29, 792–812. doi: 10.1177/13670069241253738
- Marian, V., and Hayakawa, S. (2021). Measuring bilingualism: the quest for a “bilingualism quotient”. *Appl. Psychol.* 42, 527–548. doi: 10.1017/S01427164220000533
- Martin-Rhee, M. M., and Bialystok, E. (2008). The development of two types of inhibitory control in monolingual and bilingual children. *Biling. Lang. Cognit.* 11, 81–93. doi: 10.1017/S1366728907003227
- Melzi, G., Schick, A. R., and Kennedy, J. L. (2011). Narrative elaboration and participation: two dimensions of maternal elicitation style. *Child Dev.* 82, 1282–1296. doi: 10.1111/j.1467-8624.2011.01600.x
- Mercure, E., Kushnerenko, E., and Goldberg, L. Bowden-Howl, H., Coulson, K., Johnson, M. H., MacSweeney, M. (2019). Language experience influences audiovisual speech integration in unimodal and bimodal bilingual infants. *Dev. Sci.* 22:e12701. doi: 10.1111/desc.12701
- Mercure, E., Quiroz, I., Goldberg, L., Bowden-Howl, H., Coulson, K., Gliga, T., et al. (2018). Impact of language experience on attention to faces in infancy: evidence from unimodal and bimodal bilingual infants. *Front. Psychol.* 9:1943. doi: 10.3389/fpsyg.2018.01943
- Morales, J., Calvo, A., and Bialystok, E. (2013). Working memory development in monolingual and bilingual children. *J. Exp. Child Psychol.* 114, 187–202. doi: 10.1016/j.jecp.2012.09.002
- Morin-Lessard, E., Poulin-Dubois, D., Segalowitz, N., and Byers-Heinlein, K. (2019). Selective attention to the mouth of talking faces in monolinguals and bilinguals aged 5 months to 5 years. *Dev. Psychol.* 55, 1640–1655. doi: 10.1037/dev0000750
- Pearson, B. Z., Fernández, S. C., and Oller, D. K. (1993). Lexical development in bilingual infants and toddlers: comparison to monolingual norms. *Lang. Learn.* 43, 93–120. doi: 10.1111/j.1467-1770.1993.tb00174.x
- Peña, E. D., Gutiérrez-Clellen, V. F., Iglesias, A., Goldstein, B. A., and Bedore, L. M. (2018). *Bilingual English Spanish Assessment (BESA)*. Baltimore, MD: Paul H. Brookes.
- Petit, L. A., Berens, M. S., Kovelman, I., Dubins, M. H., Jasinska, K., Shalinsky, M., et al. (2012). The “Perceptual Wedge Hypothesis” as the basis for bilingual babies' phonetic processing advantage: new insights from fNIRS brain imaging. *Brain Lang.* 121, 130–143. doi: 10.1016/j.bandl.2011.05.003
- Pierce, L. J., Chen, J. K., Delcenserie, A., Genesee, F., and Klein, D. (2015). Past experience shapes ongoing neural patterns for language. *Nat. Commun.* 6:10073. doi: 10.1038/ncomms10073
- Pierce, L. J., Genesee, F., Delcenserie, A., and Morgan, G. (2017). Variations in phonological working memory: linking early language experiences and language learning outcomes. *Appl. Psychol.* 38, 1265–1300. doi: 10.1017/S0142716417000236
- Pierce, L. J., Klein, D., Chen, J. K., Delcenserie, A., and Genesee, F. (2014). Mapping the unconscious maintenance of a lost first language. *Proc. Natl. Acad. Sci.* 111, 17314–17319. doi: 10.1073/pnas.1409411111
- Planckaert, N., Duyck, W., and Woumans, E. (2023). Is there a cognitive advantage in inhibition and switching for bilingual children? A systematic review. *Front. Psychol.* 14:1191816. doi: 10.3389/fpsyg.2023.1191816
- Poarch, G. J., and Van Hell, J. G. (2012). Executive functions and inhibitory control in multilingual children: evidence from second-language learners, bilinguals, and trilinguals. *J. Exp. Child Psychol.* 113, 535–551. doi: 10.1016/j.jecp.2012.06.013
- Pons, F., Bosch, L., and Lewkowicz, D. J. (2015). Bilingualism modulates infants' selective attention to the mouth of a talking face. *Psychol. Sci.* 26, 490–498. doi: 10.1177/0956797614568320
- Pons, F., Bosch, L., and Lewkowicz, D. J. (2019). Twelve-month-old infants' attention to the eyes of a talking face is associated with communication and social skills. *Infant Behav. Dev.* 54, 80–84. doi: 10.1016/j.infbeh.2018.12.003
- Rochanavibhata, S. (2022). *Language development in bilingual preschoolers: A cross-linguistic and cross-cultural comparison* (doctoral dissertation). Northwestern University, Evanston, IL, USA.
- Rochanavibhata, S., Chuang, J. Y. C., and Marian, V. (2023). Bilingual mothers and children gesture differently across native and second languages. *J. Monoling. Biling. Speech* 5, 201–230. doi: 10.1558/jmbs.23492
- Rochanavibhata, S., and Marian, V. (2020). Maternal scaffolding styles and children's developing narrative skills: a cross-cultural comparison of autobiographical conversations in the US and Thailand. *Learn. Cult. Soc. Interact.* 26:100413. doi: 10.1016/j.lcsi.2020.100413
- Rochanavibhata, S., and Marian, V. (2021). Cross-cultural differences in mother-preschooler book sharing practices in the United States and Thailand. *J. Child Lang.* 48, 834–857. doi: 10.1017/S0305000920000562
- Rochanavibhata, S., and Marian, V. (2022a). Culture at play: a cross-cultural comparison of mother-child communication during toy play. *Lang. Learn. Dev.* 18, 294–309. doi: 10.1080/15475441.2021.1954929
- Rochanavibhata, S., and Marian, V. (2022b). Diversity in bilingual child language acquisition research: a commentary on Kidd and Garcia (2022). *First Lang.* 42, 804–808. doi: 10.1177/01427237221100138
- Rochanavibhata, S., and Marian, V. (2024). Language-dependent reminiscing: bilingual mother-child autobiographical conversations differ across Thai and English. *Cognit. Dev.* 70:101445. doi: 10.1016/j.cogdev.2024.101445
- Rojo, D. P., and Echols, C. H. (2018). Non-native language exposure promotes children's willingness to accept labels in two languages. *J. Cognit. Dev.* 19, 107–118. doi: 10.1080/15248372.2017.1405961
- Rowe, M. L., and Weisleder, A. (2020). Language development in context. *Ann. Rev. Dev. Psychol.* 2, 201–223. doi: 10.1146/annurev-devpsych-042220-121816
- Schieffelin, B. B., and Ochs, E. (1986). Language socialization. *Ann. Rev. Anthropol.* 15, 163–191. doi: 10.1146/annurev.an.15.100186.001115
- Sebastián-Gallés, N., Albareda-Castellot, B., Weikum, W. M., and Werker, J. F. (2012). A bilingual advantage in visual language discrimination in infancy. *Psychol. Sci.* 23, 994–999. doi: 10.1177/0956797612436817
- Singh, L. (2024). A vision for a diverse, inclusive, equitable, and representative developmental science. *Dev. Sci.* 27:e13548. doi: 10.1111/desc.13548

- Singh, L., Cristia, A., Karasik, L. B., Rajendra, S. J., and Oakes, L. M. (2023). Diversity and representation in infant research: barriers and bridges toward a globalized science of infant development. *Infancy* 28, 708–737. doi: 10.1111/inf.12545
- Singh, L., Loh, D., and Xiao, N. G. (2017). Bilingual infants demonstrate perceptual flexibility in phoneme discrimination but perceptual constraint in face discrimination. *Front. Psychol.* 8:1563. doi: 10.3389/fpsyg.2017.01563
- Singh, L., Rajendra, S. J., and Mazuka, R. (2022). Diversity and representation in studies of infant perceptual narrowing. *Child Dev. Perspect.* 16, 191–199. doi: 10.1111/cdep.12468
- Sundara, M., Polka, L., and Molnar, M. (2008). Development of coronal stop perception: bilingual infants keep pace with their monolingual peers. *Cognition* 108, 232–242. doi: 10.1016/j.cognition.2007.12.013
- Takahesu Tabori, A., Mech, E. N., and Atagi, N. (2018). Exploiting language variation to better understand the cognitive consequences of bilingualism. *Front. Psychol.* 9:1686. doi: 10.3389/fpsyg.2018.01686
- Tamis-LeMonda, C. S., Kachergis, G., Masek, L. R., Gonzalez, S. L., Soska, K. C., Herzberg, O., et al. (2024). Comparing apples to manzanas and oranges to naranjas: a new measure of English-Spanish vocabulary for dual language learners. *Infancy* 29, 302–326. doi: 10.1111/inf.12571
- Tamis-LeMonda, C. S., Song, L., Leavell, A. S., Kahana-Kalman, R., Yoshikawa, H. (2012). Ethnic differences in mother-infant language and gestural communications are associated with specific skills in infants. *Dev. Sci.* 15, 384–397. doi: 10.1111/j.1467-7687.2012.01136.x
- Tamis-LeMonda, C. S., Way, N., Hughes, D., Yoshikawa, H., Kalman, R. K., and Niwa, E. Y. (2008). Parents' goals for children: the dynamic coexistence of individualism and collectivism in cultures and individuals. *Soc. Dev.* 17, 183–209. doi: 10.1111/j.1467-9507.2007.00419.x
- Thelen, E., and Smith, L. B. (1994). *A Dynamic Systems Approach to the Development of Cognition and Action*. Cambridge, MA: MIT Press. doi: 10.7551/mitpress/2524.001.0001
- Thordardottir, E., Rothenberg, A., Rivard, M. E., and Naves, R. (2006). Bilingual assessment: can overall proficiency be estimated from separate measurement of two languages? *J. Multiling. Commun. Disord.* 4, 1–21. doi: 10.1080/14769670500215647
- Titone, D. A., and Tiv, M. (2023). Rethinking multilingual experience through a Systems Framework of Bilingualism. *Biling. Lang. Cognit.* 26, 1–16. doi: 10.1017/S1366728921001127
- Tran, C. D., Arredondo, M. M., and Yoshida, H. (2015). Differential effects of bilingualism and culture on early attention: a longitudinal study in the US, Argentina, and Vietnam. *Front. Psychol.* 6:795. doi: 10.3389/fpsyg.2015.00795
- Tran, C. D., Arredondo, M. M., and Yoshida, H. (2019). Early executive function: the influence of culture and bilingualism. *Biling. Lang. Cognit.* 22, 714–732. doi: 10.1017/S1366728918000160
- Tsang, T., Atagi, N., and Johnson, S. P. (2018). Selective attention to the mouth is associated with expressive language skills in monolingual and bilingual infants. *J. Exp. Child Psychol.* 169, 93–109. doi: 10.1016/j.jecp.2018.01.002
- van den Noort, M., Struys, E., Bosch, P., Jaswetz, L., Perriard, B., Yeo, S., et al. (2019). Does the bilingual advantage in cognitive control exist and if so, what are its modulating factors? A systematic review. *Behav. Sci.* 9:27. doi: 10.3390/bs9030027
- Visser, I., Bergmann, C., Byers-Heinlein, K., Dal Ben, R., Duch, W., Forbes, S., et al. (2022). Improving the generalizability of infant psychological research: the manybabies model. *Behav. Brain Sci.* 45:e35. doi: 10.1017/S0140525X21000455
- Vulchanova, M., Vulchanov, V., Sorace, A., Suarez-Gomez, C., and Guijarro-Fuentes, P. (2022). The notion of the native speaker put to the test: recent research advances. *Front. Psychol.* 13:875740. doi: 10.3389/fpsyg.2022.875740
- Wang, Q., Leichtman, M. D., and Davies, K. I. (2000). Sharing memories and telling stories: american and Chinese mothers and their 3-year-olds. *Memory* 8, 159–177. doi: 10.1080/096582100387588
- Weikum, W. M., Vouloumanos, A., Navarra, J., Soto-Faraco, S., Sebastián-Gallés, N., Werker, J. F., et al. (2007). Visual language discrimination in infancy. *Science* 316:1159. doi: 10.1126/science.1137686
- Weimer, A. A., Gil, M., and Esquiedo, J. J. (2019). “Understanding diverse bilingual learners: the need for a transdisciplinary lens,” in *Handbook of Research on Engaging Immigrant Families and Promoting Academic Success for English Language Learners* (Hershey, PA: IGI Global), 172–185. doi: 10.4018/978-1-5225-8283-0.ch009
- Weisleder, A., Friend, M., Tsui, A. S. M., and Marchman, V. A. (2024). Using parent report to measure vocabulary in young bilingual children: a scoping review. *Lang. Learn.* 74, 468–505. doi: 10.1111/lang.12617
- Williams, A., Srinivasan, M., Liu, C., Lee, P., and Zhou, Q. (2020). Why do bilinguals code-switch when emotional? Insights from immigrant parent-child interactions. *Emotion* 20, 830–841. doi: 10.1037/emo0000568
- Williams, K. (1997). *Expressive Vocabulary Test*. Circle Pines, MN: American Guidance Service.
- Yang, S., Yang, H., and Lust, B. (2011). Early childhood bilingualism leads to advances in executive attention: dissociating culture and language. *Biling. Lang. Cognit.* 14, 412–422. doi: 10.1017/S1366728910000611
- Yoshida, H. (2008). The cognitive consequences of early bilingualism. *Zero to Three* 29, 26–30.
- Yurtsever, A., Anderson, J. A., and Grundy, J. G. (2023). Bilingual children outperform monolingual children on executive function tasks far more often than chance: an updated quantitative analysis. *Dev. Rev.* 69:101084. doi: 10.1016/j.dr.2023.101084