Bilingualism: Language and Cognition

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Sociocultural dimensions of early dual language learning

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Peer Commentary

Cite this article: Genesee F (2023). Sociocultural dimensions of early dual language learning. *Bilingualism: Language and Cognition* **26**, 33–35. https://doi.org/10.1017/S1366728922000384

Received: 5 May 2022
Accepted: 5 May 2022
First published online: 30 May 2022

Keywords:
childhood bilingualism; bilingual acquisition

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Titone and Tiv's *Systems Theory of Bilingualism* aims to "urge cognitive scientists and neuroscientists to better embrace sociolinguistic and sociocultural experiences as part of their theoretical and empirical purview". No stronger case for such a framework can be found than in studies of developmental aspects of bilingualism. In fact, inclusion of sociocultural variation has been a common feature of many studies of dual language learning for some time, especially in studies of pre-school and early-school-age learners (see Genesee, 2019, for a review). Young dual language learners – neonates, infants and toddlers, exposed to more than one language – begin life as virtual *tabula rasa* and are capable of learning any language with facility. As a result, their language acquisition is necessarily tied to the sociocultural parameters of the learning environments they are exposed to. Moreover, as Titone and Tiv emphasize, the immediate and ultimate purpose of language learning is communication. Thus, young dual language learners must be attuned to and acquire the sociocultural constraints and norms for communicating effectively in more than one language. While sociocultural variation is important for understanding language acquisition even among monolingual children living in relatively homogeneous monocultural environments, sociocultural variation is inherent and, indeed, enhanced in the learning environments of children acquiring more than one language insofar as each language is intimately linked with different socio-cultural parameters. Sociocultural variation can be important for understanding bilingualism in yet another way. In studies of the neuro-cognitive consequences of bilingualism, it has been reported that there is a more pronounced association between dual language exposure and activation of certain brain areas among adolescent bilinguals from relatively low SES backgrounds than bilinguals from relatively high SES backgrounds (Brito & Noble, 2018). Inclusion of sociocultural variation in research on the effects of bilingualism can reveal a more nuanced view than emerges if such variation is not considered.

Socio-cultural influences have not always been taken into account in studies of dual language learning. Early studies tended to take a decontextualized approach that was predicated on a monolingual perspective, or what has been referred to as a MONOLINGUAL BIAS (Genesee, in press). As a result, misinterpretations of early dual language acquisition were proposed. Widely cited examples of this are studies by Volterra and Taeschner (1978) and Leopold (1939–49) who argued that true bilingualism was not evident in young bilingual learners during the first years of development as evidenced by their use of linguistic elements, and in particular words, from their two languages in the same utterances or conversations. However, in an early study in our lab, we found that 22–26-month-old children exposed to English and French in the home used each language differentially and appropriately with each parent who typically used only English or only French with them (Genesee, Nicoladis & Paradis, 1995). While the difference between mothers and fathers is admittedly a relatively simple sociocultural distinction, inclusion of it in the design of this study revealed that there was functional separation of these children's languages and not fusion as had been argued by Volterra and Taeschner and Leopold, among others. The broader significance of sociocultural context is perhaps better illustrated in a study by Lanza (1997) in a case study of a child (Siri) in Norway who was being raised bilingually in English and Norwegian by her bilingual parents. Lanza observed that Siri mixed both languages in interactions with her father, a native speaker of Norwegian, much more than with her mother, a native speaker of English. Siri's mother's use of various strategies to discourage her daughter from using Norwegian, arguably, was intended to promote her development of English because this was one of the few opportunities her daughter had to use and learn English; elsewhere, everything took place in Norwegian.

There is also evidence that broad sociolinguistic characteristics of the environment, or what Titone and Tiv refer to as "ecological dynamics", can influence young dual language learners' linguistic development in specific ways. For example, Perez-Leroux, Pirvulescu and Roberge, (2009) found that 3-year-old French–English bilinguals living in Toronto, an English-dominant city, lagged behind native speakers of French in their use of object pronouns in French, a notoriously difficult aspect of French morphosyntax. In contrast, Paradis, Crago and Genesee (2006) failed to find such a difference in same-age French–English bilinguals and monolinguals in Montreal, a bilingual city where French and English both have high status and are used widely in all spheres of life. In a related vein, Oller and Eilers (2002) reported significant differences in

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the vocabulary scores of bilingual and monolingual students in a large scale study in Miami where Spanish, although widely spoken, enjoys considerably lower status than English. In contrast, Smithson, Paradis and Nicoladis, (2014) found few differences in the vocabulary scores in English and French of bilingual and monolingual children in Edmonton, Canada, where French and English are both official languages. Although alternative explanations of these discrepancies are possible, taken together, they are consistent with the notion that early dual language development does not take place in a sociolinguistic vacuum and, rather, that community-wide sociolinguistic variables can influence the language learning outcomes of young learners.

There is evidence that even very young language learners are sensitive to proximal cues about the physical and linguistic input in their environment that index sociocultural variation more broadly. For example, within 24 hours of birth, newborn monolinguals prefer to listen to their mothers' voice more than another woman's voice (DeCasper & Fifer, 1980) and 2-day-old monolinguals prefer to listen to audio clips of their native language versus clips of an unfamiliar language (Moon, Cooper & Fifer, 1993). These findings strongly suggest that even prenatal experiences can influence infants' sensitivity and attention to the quality of the voices/speakers and languages they are exposed to. The early linguistic experiences of children exposed to two languages are similarly consequential. For example, Byers-Heinlein, Burns and Werker (2010) have shown that, on the one hand, English–Tagalog bilingual and English monolinguals have similar abilities to discriminate between English and Tagalog shortly after birth (0–5-days of age), but that, on the other hand, the monolingual neonates preferred to listen to clips presented in English while the bilingual neonates demonstrated equal preference to listen to both languages. The ability to distinguish such differences early in life is important in order to build separate linguistic systems and, importantly for the present commentary, to learn about the sociolinguistic characteristics of those languages and how to use them.

There is emerging evidence that young language learners, including bilinguals, are sensitive to contextual cues that are associated with more abstract sociolinguistic categories. Uttley, de Boisferon, Dupierrix, Lee, Quinn, Slater and Pascalis (2013) report that 11-month-old monolingual English-learning infants paired East Asian faces with Cantonese language samples, but not with an unfamiliar language, indicating they had learned associations between specific languages and ethnicities. Hu (2017) found that 10-month-old Chinese–English infants were better able to discriminate a phonemic contrast in Chinese when primed with an East Asian face than when primed with a Caucasian face. She argued that facial cues associated with specific ethnicities can facilitate discrimination of sounds in the languages frequently experienced with those ethnicities.

While the evidence reported to this point is largely behavioral in nature, there is some evidence, albeit limited at present, that the sociocultural variation that bilinguals experience during early development implicates or can change the neuro-cognitive processes that underpin their language development. For example, neonates show different patterns of neural activation in response to exposure to a native versus an unfamiliar language soon after birth (May, Gervain, Carreiras & Werker, 2018). Using a differential looking task, Ramon-Casas, Swingley, Sebastián-Gallés and Bosch (2009) found that while 18-month- old Catalan-speaking monolinguals looked longer at correctly pronounced Catalan words than mispronounced words, indicting that they had learning the phonotactic constraints of the target words, bilingual Spanish–Catalan infants failed to do so until several months later. The researchers proposed that children learning two languages simultaneously keep the phonological boundaries around phonemic categories in their developing languages relatively open or permeable in order to accommodate the variable phonological forms they hear from second language speakers. In effect, this response represents an adaptive strategy in response to inherently complex and variable input.

Finally, a number of studies have revealed that word learning in bilinguals is sensitive to sociocultural variation. Specifically, Singh, Tan, Lee and Quinn (2020) found that 2-year-old monolinguals' and bilinguals' looking times differed to correctly and incorrectly pronounced words when presented in the context of same-race versus other-race visual cues – both the monolingual and bilingual infants associated correctly pronounced labels, but not mispronounced labels, with visual targets when the words were associated with own-race speakers. In contrast, when presented with images of other-race speakers, the monolingual infants did not respond differentially to the visual targets regardless of whether the words were correctly pronounced or mispronounced, whereas the bilingual infants associated correctly pronounced labels, but not mispronounced labels, with visual targets, as they had when shown same-race faces. These findings are compatible with those of a recent study by Weatherhead, Kandhadai, Hall and Werker (2021) who, in brief, found that 18-month-old bilinguals' use of the mutual exclusivity principle for word learning differed depending on their access to visual cues that, once again, were associated with ethnicity and, in turn, language.

Whether the significance of the effects reported in these studies is truly sociocultural in nature and/or reflects the same kinds of influences evidenced in adults is an open question. Nevertheless, the stimulus variations that were manipulated in these studies – mother/father, familiar/unfamiliar speakers/faces, and same-race/other-race, index sociocultural variations of some significance in the community at large. Thus, at a minimum, these findings argue that very young dual language learners are sensitive to aspects of the environment that typically index socio-cultural-linguistic variation of some significance more broadly. Albeit limited at present and awaiting replication, these findings also shed light on the flexibility and capacity of the neuro-cognitive system that supports early language acquisition under different circumstances, insights that would be less evident from studies of learners in monolingual environments only. In other words, inclusion of sociocultural variables in research on bilingualism can enhance our understanding of both sociocultural and neuro-cognitive aspects of bilingualism, as argued by Titone and Tiv.

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