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Bilingualism: Language and Cognition 20 (1), 2017, 25–26 © Cambridge University Press 2016 doi:10.1017/S1366728916000328

Exposure is not enough

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(Received: February 14, 2016; accepted: February 15, 2016; first published online 11 March 2016)

Child language researchers have often assumed that progress in first language learning depends heavily on language exposure. For example, Hart and Risley (1995) compared children in middle class families with children in lower class families. Based on recordings made across several years in the home, they estimated that by the time the children from lower SES families entered first grade they had heard 30 million fewer words than the middle class children. Researchers and educators have argued that this '30 million word gap' is a primary cause for academic failure of lower SES children in the primary grades in the United States. Researchers in second language acquisition (SLA) research have often postulated a similar linkage between exposure and attainment, both for early and simultaneous bilingual children and later second language learning. Carroll (Carroll) expresses justifiable skepticism regarding such claims regarding the effect of amount of exposure on language attainment. Despite some important differences in conceptualization of the nature of the input, I find her overall analysis compelling and important.

Carroll begins by questioning whether exposure qualifies as input. In this regard, Kuhl (2007) has shown that children will not acquire language from sources such as video or audio. Even when listening to conversations, children may fail to attend to everything around them. As Carroll puts it, "the idea that all aspects of the signal matter all the time seems implausible." Simply interacting with a chatty mother does not guarantee that a child will be linguistically advanced.

To further challenge the idea that input alone is enough, Carroll notes that children have no direct access to abstract cues such as 'Subject' or 'V2'. This is certainly true. However, cue-based models of language acquisition such as the Competition Model (MacWhinney, 1987) do not require the child to rely on abstract categories. That model explicitly lists the four types of surface cues directly available to the child (surface word order, affixes, lexical types, and prosody). Moreover, the theory of item-based pattern learning (MacWhinney, 1975, 2014) shows how higher-level syntactic patterns can be extracted over time on the basis of patterns available from the words in the surface form of utterances, and there is good evidence that children operate in just this way (Ambridge & Lieven, 2015), thereby escaping putative learnability issues based on a supposed poverty of the stimulus (MacWhinney, 2004).

Although arguments based on poverty of stimulus severely underestimate the richness and structure of the input to children, they play a positive role in focusing our attention on areas of relative learning difficulty, such as auxiliary placement or marking of the irregular past tense. For these and many other structures, it is the shape of the possible competition between alternatives that determines the relative ease of learning. In this sense, Carroll is right in emphasizing the fact that mere frequency and exposure alone do not determine learning outcome. Rather, learning is sensitive to the varying difficulty of a given language structure and linguistic level (MacWhinney, 2015b). This effect is further amplified by competition between the languages of a young bilingual (Döpke, 1998; Yip & Matthews, 2007).

Carroll is also right in pointing out that some forms can be learned quickly with only basic exposure. Here, she points to the literature on FAST MAPPING. However, that form of learning, while important, only describes initial triangulation of the general meaning of a new word, not the full and robust acquisition of meaning. What is more important in this regard is the degree to which a new word aligns with an unoccupied conceptual niche. If a child already has an interest in a concept, such as *cookie*, and is simply looking for a way to talk about that concept, learning can be quick. Moreover, if the new form, such as *byebye*, occupies a niche that is not in competition with other forms, learning can also be quick and robust. Learning is most problematic for forms that compete closely with one another (Gershkoff-Stowe, Thal, Smith & Namy, 1997). In these various ways, mere lexical frequency is not a good predictor of either order of acquisition or lexical strength (Baayen, 2010).

Carroll also critiques claims regarding the linkage of input to the emergence of a weak language in child bilinguals. Meisel suggests that, after age 3, children no longer learn a language in the same way as before. However, it is difficult to distinguish a maturational account from the growth of competition and transfer effects as each language becomes differentially entrenched (MacWhinney, 2015a). What is more striking is the way in which children will abandon a home language

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https://doi.org/10.1017/S1366728916000328 Published online by Cambridge University Press

under pressure from the community language, particularly when entering nursery school and public school. To account for such changes in language dominance, one hardly needs to rely on maturational accounts. Perhaps the clearest and most poignant case of this was reported by Burling (1959). During Burling's fieldwork in the Garo Hills of Myanmar, his son Stephen acquired Garo as his dominant language. However, at the age of 2;10 the family left the Garo hills. On a flight home from Bombay, Stephen attempted to speak in Garo with the boy sitting next to him, but the boy only spoke Malay. After that incident, Stephen gave up on any attempt to speak Garo, falling back onto English and within six months had lost any ability to name even the most basic objects in Garo.

It may seem that Carroll's focus on the cultural impacts on childhood bilinguals fails to interact with her emphasis on learnability. However, both of these viewpoints provide us with windows on the fundamentally competitive nature of language learning and usage. Within this process, frequency of exposure can play a certain role, but only as modulated by the forces of dominance, preference, and code-switching, as well as the ongoing interplay of lexical, phonological, syntactic, and discourse structures.

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https://doi.org/10.1017/S1366728916000328 Published online by Cambridge University Press