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In Support of Varying Approaches to the Study of Variation

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ABSTRACT

The acquisition of variation is a fundamental – but poorly understood – part of child language acquisition. We fully endorse Shin and Miller's call for us to recognize the importance of this core issue, and argue that our understanding could be further enriched by greater reliance on convergent methods. As such, we implore researchers to consider perception as well as production data, and to consider acquisition across different domains and different populations of children.

The acquisition of variation has long been neglected by many in the field, seen either as a peripheral part of the language acquisition problem or one that is simply too complicated to even begin to tackle. We wholeheartedly endorse Shin and Miller's call for the field to go further in recognizing that children are faced with variation at multiple levels of language – and that acquiring these variants and the constraints governing their use is fundamental to children's learning problem.

S&M propose a trajectory for the early acquisition of morphosyntactic variation, in which children initially choose a single (usually most frequent) form and overregularize it, then use more than one form in mutually exclusive contexts, and then show increasing use of variable forms in overlapping contexts. This is an intriguing proposal. However, we believe that our understanding of the *how* and *why* of children's acquisition of morphosyntactic variation will be substantially enriched by approaching these questions from multiple angles (Johnson & White, 2020) and considering how children's acquisition of morphosyntactic variation relates to their acquisition of variation at other levels of language.

Critically, we must do more to extend this work to the perceptual domain. Since children's receptive knowledge often far outstrips their productive knowledge, perceptual studies can both probe knowledge of variation at younger ages and help elucidate how language variation is acquired. The same surface behavior could arise for multiple reasons. When children use a single form in their production, do they accept additional variants in their perception? Do children producing variants in mutually exclusive contexts show the same contextual restrictions in comprehension? Children show dissociations between their productive and receptive knowledge in multiple domains of language acquisition (e.g., exhibiting a restricted phonological repertoire in their word productions while showing knowledge of the adult forms perceptually; Swingley & Aslin, 2002; Vihman et al., 1986). In some cases, perceptual findings have upended theories generated based on production data alone. For example, our understanding of early grammatical development changed dramatically when it became apparent that children are perceptually sensitive to function morphemes well before they use them in their own speech (Shafer et al., 1998).

Work from our labs on the perception of phonological/lexical variation demonstrates that children accept multiple variants in some situations, even at ages that overlap with the first

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stage in S&M's proposal. At the lexical level, infants and toddlers show tolerance for multiple forms, learning that variation in vowel height, for example, is linked to speaker identity or race (Weatherhead & White, 2016, 2021) and recognizing words across dialects (van der Feest & Johnson, 2016; van der Feest et al., 2022). The contrast between these findings and those discussed by S&M raises important and exciting questions. What drives these differences? Are they purely due to differences in children's perceptual vs. productive capabilities? Or are they instead due to differences in the acquisition of phonological/lexical vs. morphosyntactic variation, perhaps because the former is experienced more often or involves more straightforward mappings from forms to meaning? Another intriguing possibility is that perceptual and production systems function differently in how they handle multiple representations, because the perceptual system, by necessity, must maintain more flexibility to cope with changing information across contexts. Probing these differences further (in perception vs. production and across domains of language) may provide important insights into the factors that influence children's treatment and acquisition of variation.

We also argue for approaches that more closely tie specific input patterns to specific learning outcomes, and, critically, do so for children across a range of environmental experiences. Children vary greatly in their exposure to language variation and in the nature of their exposure. For example, some children learn non-dominant varieties alongside the dominant variety, and therefore may be exposed to more variation than children primarily learning the dominant language variety, as their caregivers shift their use of variants in nuanced ways across contexts (Washington & Craig, 1998). Moreover, children themselves will vary in their productions, depending on who tests them and in what context (Washington et al., 1998). We now have the tools to go beyond the small-scale studies that characterize most work in language development and conduct large-scale (big-data) experiments of children's input and language behavior. Just as we need to move past children learning English to uncover general principles underlying language acquisition (Christiansen et al., 2022) and beyond small groups of children with specific configurations of languages and input conditions to understand bilingual acquisition, so, too, will we need to consider children's acquisition of variation across variable populations and circumstances. Big data approaches will be essential for extracting the complex relations among exposure patterns and children's acquisition trajectories.

Importantly, in order to interpret the relations between input patterns and children's behavior, it will also be crucial for psychologists to weigh in on how children's own perceptual, cognitive, and social biases and abilities act as filters on the input. Like S&M, we suspect that input frequency alone will not fully explain children's acquisition patterns. Children may be more sensitive to information in certain linguistic (Johnson et al., 2014; Slobin, 1973) or social contexts, or coming from certain people (Sumner et al., 2014). They may be constrained in their analyses not only by their existing linguistic knowledge, but also by their cognitive or social analyses of the world. All of these factors may serve to warp their intake of input patterns beyond raw frequency.

Just as the child's task is to determine the causes underlying the language patterns they observe in the world, so our task is to determine the causes underlying children's language behavior. And just as a child may draw incorrect inferences from narrow data, so, too, must we tackle the issue of variation using a wide lens. This will require bridging domains – linguistic, cognitive, social – as well as approaches – naturalistic, experimental, and computational. We thank S&M for this call and look forward to the research it inspires. We anticipate that the results will force the field to reconsider current models of language acquisition.

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