

## An Ideational account of early word learning: A plausibility assessment

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**Abstract.** The theoretical framework of Bloom's account of child word learning is here assessed only for initial plausibility and neural plausibility. The verdict on both dimensions is low, largely due to the size and character of knowledge it is claimed that the child brings to the task. It is suggested that elements of constructivist accounts could profitably be drawn from to reduce this implausibility.

Bloom construes early word learning as a mapping task in which the word maps onto a psychological entity that is a concept. His test for successful mapping of referential terms is getting their extensions right; a concept's role is to pick out the right category of things in order for the sole business of the language, communication, to proceed. The local linguistic context generally provides only the language-specific word to be mapped onto the pre- and non-linguistic concept, which plays much the same role as Locke's "ideas" did (Locke 1690), minus his *tabula rasa*. To solve the mapping problem, the child uses multiple strategies, of which the central one is discerning the intentions of speakers. In the basket of competencies available to the child, essentialism, the assumption that many individuals are referred to by the same word because of a shared hidden essence, is also a significant asset. Drawing upon a wealth of experimental results, Bloom applies this explanation to defeat the alternative explanations of empiricist associationism and of specifically linguistic constraints.

**Initial Plausibility.** The account is low on initial plausibility. First, it violates the requirement that the direction of explanation be from the less understood to the better understood. Another concern derives from the mutually-supporting character of the basic assumptions of Bloom's explanation, e.g., (1) an ideational theory of word meaning and (2) the independence from language of human conceptualization and other higher cognitive competencies. One might argue for the Ideational Thesis on the basis of the Independence Thesis, and vice versa; but confirmatory evidence of either in which the other is not assumed is desirable. To these two assumptions are added the Essentialist assumption and the Theory of Mind assumption. Taken together, these assumptions yield a coherent explanation, to be sure, but no independently compelling evidence is given for any one of them. Instead, the argument strategy adopted is inference to the best explanation, in which it is sufficient to show that, of all available candidate explanations, only this one accounts for all the cases. But *have* all available competing explanations been considered?

**Neural Plausibility.** A different concern arises from the amount of knowledge that is attributed to the

prelinguistic infant, a concern that raises issues that breach the boundaries of a psychologically autonomous theory. That amount of knowledge makes Bloom's proposed explanation neurally implausible. Human brain plasticity and immature birth argue for human selection for adaptability over adaptedness (Lorenz 1965). That we are born knowing so little that we cannot do much enhances our abilities to adapt to the environment through acquiring information from it that the adaptedness of other species, to their disadvantage, prevents them from acquiring. Human brain plasticity, immature birth, and high degree of adaptability make plausible the hypothesis that humans have less in the way of species-specific ("off the rack") initial knowledge structures than are enjoyed by other species, enabling them to build knowledge structures that are more useful to them because the structures are "tailor-made" through interaction with the environment. From a design stance, economy would be served if these structures were also general rather than domain specific.

**Constructivism.** The above considerations lead us to expect the development of new information-bearing and other cognitive neural structures in response to the organism's interactions with the environment, particularly structures that subtend major behaviorally manifested cognitive achievements like language development. The neural constructivist proposal (Quartz & Sejnowski 1997) offers just that, itself building on the long tradition of constructivism in psychology (see, e.g., Bruner et al. 1956; Bruner 1963; Piaget 1971; Vygotsky 1978). In Nolan (1994a), I sketched an account of how new psychological cognitive structures might be constructed from structures already in-place together with environmental input and showed how that hypothesis might explain experimental results then available on word learning; and in Nolan (1994b) I proposed that a structure in which words are used purely referentially, representing perceptual categories, may likely precede the development from it, caused by environmentally presented problems, of true conceptual categories, understood as associated with predicates rather than as merely referring expressions. Here are two examples, over-simple and under-realistic for brevity and intended only schematically, to illustrate the sort of relations proposed among cognitive structures. The word 'dog' may initially be used as if it were the name of the family pet, then to refer to each neighborhood dog, both uses being based on perceptual categories alone; later, to solve problems with the extension of the word and to resolve the roles played by its superordinates and subordinates, that same word takes on predicative content, and is transformed qualitatively into a conceptual category. The development from babbling to the phones of the local language instantiates an analogous, but even simpler, construction of a new cognitive structure from an old one in response to environmental complexities. In each case, the shift may not be perceived as any simple act that the child does differently. These issues cannot be stated within the framework of Bloom's account. The proposal of Quartz and Sejnowski comes at a time when the interface between psychology and the neural sciences is in focus, making the lack of consideration of a psychological constructivist alternative to the three explanations considered by Bloom striking. Absent consideration of all alternative explanations, the strategy of argument to the best explanation fails.

The exchanges generated by Quartz and Sejnowski (1997) confirm that determining what constitutes a new, constructed, cognitive, neural structure requires cooperation from psychology, in the form of identifying which cognitive achievements might signal the emergence of a new cognitive structure, even though it may turn out that neural construction is in some way continual. In collecting and reviewing experimental results that are inconsistent with both associationist and language-specific constraints, Bloom's book presents significant data for the cooperative project of psychological and neurological constructivism. Furthermore, his arguments (1) that the significant cognitive structures evidenced in language development with respect to word learning are general knowledge structures and (2) that the cognitive strategies used by the child in this task are multiple, cohere firmly with constructivist explanatory hypotheses, neural and psychological.

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