
INTRODUCTION

Cognitive Development in Language Acquisition

Daniel Swingley

Department of Psychology, University of Pennsylvania

When one speaker of a language talks to another, we might say the listener is solving an equation with only one unknown. The listener knows the conventions of the language and has an understanding of the state of the world to which the speaker refers; she needs only determine the speaker's meaning. When all goes well, the sentences, the language, and the situation together suffice for passing ideas from one person to another.

If this is so, what are we to make of the language learning process, which seems to entail solving a single equation with two unknowns? If the listener knows neither the message nor the standards of the language, how can she proceed? The usual answer is to suppose that the message is partly inferrable from the context and that the language is partly in the child's head from the start. The child is solving an equation with two unknowns that are not, in fact, entirely unknown. Many of the interesting arguments about language acquisition concern the balance of the two. Perhaps in many situations the shared human perspective of parents and children allows parents to provide messages that are already mostly inferrable from the context, leaving language as the single unknown. Or perhaps the language is sufficiently constrained to make messages mostly interpretable using the preexisting linguistic system.

There are no absolutists in this debate, and its richness is not reflected in this characterization. However, even this simple characterization presupposes that one variable is fixed, that is, the listener's understanding of the state of the world. Yet contrary to this assumption, the study of cognitive development provides serious proposals that children are very different from adults in their basic conceptualizations of anything we might wish to talk about, from things to events to attitudes. Infants are said to assume that an object might spontaneously change in all its visual properties and yet remain the same object; children are claimed to have a perilously vague grasp on cause and effect; preschoolers are argued to confuse their own thoughts and those of other persons. If the mental lives of young children are extremely different from

our own, the apparent difficulty of language acquisition is made more severe, and the possibility for language use to have an impact on children's conceptualization of the world is greater.

To the extent that language development occurs in children while cognition itself is still a work in progress, those who study language acquisition might profit from debates about cognition that may not have made their way into linguistics and psycholinguistics. It was in this spirit that the officers of the Society for Language Development invited speakers Renée Baillargeon, Gergely Csibra, and Laura Schulz for the 2009 SLD symposium in Boston, which was entitled "Interactions Between Early Cognitive Development and Language Acquisition." Each of our speakers was then asked to write an article for this special issue of *Language Learning and Development*. Gergely Csibra was unable to offer an article at the time; we invited Laura Namy to contribute a paper about mechanisms of word learning in young children. In their article, Renée Baillargeon and colleagues make the case that infants' apparent failure to determine whether an object that undergoes an event is, in fact, one object or two objects, does not imply a radically immature conceptualization of objects. Instead, it is a consequence of how infants interpret actions. Infants who are still developing intuitions about different sorts of events only treat a subset of objects' properties as relevant to understanding each event, and this leads to a failure to retain that information under certain conditions. The paper ties together work on object individuation with a larger literature on infants' conception of the physical world. While the paper focuses on object individuation, it also suggests to me an interesting parallel with language learning, in the proposal that infants sort their experience into discrete categories. Perhaps, both in language and in event cognition, children's inferences are guided by categorical descriptors rather than complete perceptual characterizations, in spite of the hazards this data reduction might imply.

Namy, in her paper, tackles the question of how to account for young children's ability to learn words. Is word learning a matter of associating conceptual categories with words' linguistic forms, and then forming complex generalizations over those associations? Or is such an account fatally incomplete? "Associationist" accounts have been disparaged for neglecting too much: grammatical knowledge, children's intuitions about reference, the sharing and "meeting of minds" characteristic of human interaction. Namy argues that association has been underestimated and that complex associations between linguistic forms and concepts provide the foundation for language understanding—but just the foundation: as children learn more and more, they can go beyond association to make rational, linguistically and socially informed judgments about the meanings of new words.

Muentener and Schulz describe an ingenious series of studies showing that many of children's inferences about the world are driven by their own exploratory action, which is affected in interesting ways by what others say, and do not say, in conversation. In many cases, these demonstrations reveal that children's understanding goes beyond the literal content of the sentence. Children recognize the importance of the *context* of linguistic interactions. It is to be expected that children learn from conversations with adults; what is surprising in this work is the catalytic effect of language on children's observations and the importance of children's construal of the purpose of a conversation.

Returning to the problem raised at the start of this commentary, what can we say about the nature of children's conceptions of the world? It seems clear that we cannot take for granted that children's concepts align with our conceptual categories, or with those that fit best with the

categories provided in human language. In addition, we cannot assume that children's perceptual access to facts about the world reliably provokes the inferences that are readily available to adults. Yet on the positive side, the greater the distance between the infant's mind and our own, the stronger and more powerful the child's capacity to learn must be. All of these messages, exemplified so well in the following papers, speak to the importance of maintaining contact between research on language acquisition and the study of cognitive development.