

BOOK REVIEW

Pathway to Developmental Psycholinguistics: Review of *Pathways to Language*

Kyra Karmiloff and Annette Karmiloff-Smith
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Research on language acquisition in the last century has always seemed pretty exciting to those conducting it. Because language is emotionally involved in our sense of personal identity and evolutionary uniqueness, it is not surprising that theories about how language is learned have often accompanied excitement and fervor. Nowadays, students of developmental psycholinguistics have an additional source of excitement: Instruments for measuring brain and behavior are rapidly becoming more and more sophisticated, and information technology now permits researchers to share vast amounts of language observation data. The field has therefore undergone incredible growth in the past few decades. This growth has been so fast, in fact, that newcomers to the field often find it somewhat daunting to approach its various areas of research. Kyra Karmiloff and Annette Karmiloff-Smith offer a remedy with “*Pathways to Language*,” a concise yet comprehensive review of current experimental methods and findings in developmental psycholinguistics. The book is an excellent introduction to the field, and provides fairly extensive suggestions for further reading on the topic of every chapter.

Each chapter provides an overview of prominent findings in recent research. For example, research on speech perception has made discoveries that challenge common assumptions about language learning (for a more detailed review of this area, see Jusczyk, 2000). Intuitively, one might imagine that children acquire language in stages of increasing complexity: sounds, syllables, words, sentences, etc. It turns out that this assumption is false. Infants actually have a grasp on some complex properties of speech when they emerge from the womb. They enter their postnatal environment with enough auditory experience to discriminate their mother’s native language from others. In fact, in the third trimester, the fetus can hear low-frequency speech sounds that reveal the sing-song intonation pattern of a spoken language. Though published after the book, connectionist simulations of this process offer a computational implementation of this result (Christiansen & Dale, 2001). In these simulations, the intonation pattern of English was independently presented to neural networks in a pre-training phase, and it improved English syntax acquisition by the neural network models. These experimental and computational results show that the child’s sensitivity to both simple and complex patterns of language emerge early. It seems, therefore, that “language perception actually develops at many levels simultaneously.” (p. 54)

A detailed chapter on acquiring grammar presents both some exciting recent discoveries, and well-established findings. For example, it is commonly observed that a child's language comprehension skills outpace his or her spoken vocabulary. One may be surprised that this disparity is actually larger than previously thought. Even before they can produce more than one-word sentences, children seem to be sensitive to word order in describing the world. Seventeen-month old children are able to distinguish the difference between "Big Bird's tickling Cookie Monster" and "Cookie Monster's tickling Big Bird" as they relate to events in the world. It is surprising that children at such a young age have some understanding of the importance of word order in English.

The ability to produce grammatical utterances, however, emerges much more slowly than comprehension. This emergence, it turns out, follows very uniform patterns in most children learning the same language. This well-established and interesting result comes from analyses of child language samples. These analyses show, for example, that children learn to produce the gerund marker *-ing* (as in *running*) before they learn to pluralize nouns with *-s* (as in *bats*). An important goal of theories of language acquisition has been to explain the asymmetry between production and comprehension, along with the surprising uniformity with which both develop.

Another active area of research in developmental psycholinguistics, one that sparks considerable debate, is language learning under atypical circumstances. An entire chapter is devoted to this topic, and it succeeds in conveying the relevance (and practical importance) of explaining what underlies language learning or impairment in special cases. For example, data on the acquisition of sign by deaf children will be very interesting to the reader. It has been established that even in impoverished environments, such as learning from parents without a fluent sign language, children learn a natural sign system. Even children who do not have the good fortune of learning sign from their parents invent a rich manual communication system to interact with them. These data, along with data on language acquisition in blind children, demonstrate that almost any child "will eventually surmount the obstacles resulting from his sensory deprivation." (p. 189) Other atypical cases, such as specific language impairment, Williams syndrome, and Down syndrome, involve important observations that any theory of language acquisition must accommodate. The authors give the reader an important sense of the controversy surrounding competing theoretical accounts.

The book ends with a short chapter on rethinking the debate on nature and nurture, and offers some thoughts on the evolution of language. In this brief section, the authors also explicitly present their own theoretical perspective: Humans come to the task of language acquisition with domain-relevant skills, but are not specifically equipped with language-specific mechanisms. Indeed, they claim that "evolution has provided humans with a wide variety of learning mechanisms and a very long developmental period in which to learn and shape our brains." (p. 224) In support of this, the chapter offers well-known examples of primate language research and some reflections on the complexity of other cognitive tasks. Arguably, the authors' case could have been made considerably stronger with a more detailed review of the relevant data as it bears on this theoretical perspective. For example, experiments conducted by Tomasello and colleagues (pp. 139-144; see also

Tomasello, 2000) demonstrate that abstract grammar is not present in children until after considerable language experience. Considering such findings, alongside a more detailed discussion of others, would have strengthened their position. It would also provide the reader with a coherent framework in which to integrate the book's comprehensive discussion of empirical findings.

Because the book undertakes both conciseness and comprehensiveness, there are some expected drawbacks. For example, the consideration of language evolution, and its suggested readings, neglects a rather large literature that explores this topic (for an excellent review, see Hurford, 1999). Also, the authors indicate that the cross-cultural relevance of motherese (the distinctive speech caregivers direct to children) should be explored and debated, but give this issue short shrift (pp. 48, 54, 93). Finally, the section on connectionism (pp. 144-146) is very brief, and appears suddenly at the end of the chapter on grammar acquisition. A reader unfamiliar with this approach may find it historically and conceptually disconnected from previous discussion.

Although the authors favor their own interpretation of the results when it's offered, the reader has fair opportunities to interpret them for him or herself, particularly in view of the suggested readings for most chapters. And despite the book's shortcomings, it succeeds in making the vast field of developmental psycholinguistics accessible to newcomers. As an introduction to the methods and findings in the field, the book is probably one of the most accessible and enjoyable to read. When beginning to learn about developmental psycholinguistics, I myself would have found it more tractable had a book of this kind been available.

References

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