

Cambridge University Press

978-0-521-59299-4 - Routes to Child Language: Evolutionary and Developmental Precursors

Joanna Blake

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## Routes to Child Language

This remarkable book provides a detailed comparison of non-human primates and human infants with regard to key abilities that provide the foundation for language. It makes the case for phylogenetic continuity across species and ontogenetic continuity from infancy to childhood. Examined here are behaviors fundamental to language acquisition, such as vocalizations, mapping of meaning onto sound, use of gestures to communicate and to symbolize, tool use, object concept, and memory. The author provides evidence linking these abilities with language acquisition. This volume goes a step further to analyze the similarities and differences across species in these precursors and how these may have influenced the evolution of language. Fascinating hypotheses about the origins of language are described.

Joanna Blake is Associate Professor of Psychology at York University, Toronto, Ontario, Canada.

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## *Evolutionary and Developmental Precursors*

JOANNA BLAKE

*York University, Toronto, Canada*



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*This book is dedicated with love and gratitude to my family,  
Eugene, Nicholas, and Rebecca Maiese.*

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## Preface

The purpose of this book is to address the issue of continuity, both phylogenetic continuity across species and ontogenetic continuity across infancy to childhood. The focus is on behaviors that have been proposed as essential precursors of language: nonmeaningful sound production; early mapping of meaning onto sound; communicative hand and body movements (communicative gestures); movements that represent actions and objects (symbolic gestures); pretend play involving toy animation and imaginary use of objects; use of an object to achieve a goal (tool use); understanding of how objects behave in space, whether visible or not (object permanence); and memory for spatial layouts, objects in arrays, actions and events (delayed imitation), and lists of items (auditory memory). All of these precursors have been investigated in human infants with regard to their impact on early language, as well as others that will not be treated. Emotional factors that may be crucial for language, namely early processing of facial expressions and attachment, will not be included. These precursors have been addressed in recent books by Bloom (1993) and Locke (1993). I will also focus on language production with less emphasis on language comprehension, except for standardized tests of receptive language. This is because the vast majority of research on the precursors that I have selected is focused on their relation to language production. Speech perception will also not be covered; it has been reviewed recently by Jusczyk (1997).

This book extensively reviews research findings, both from our own studies and from those of other investigators, regarding the development across infancy of these abilities purported to underlie language. In the case of memory, the review includes results from children as well, because much of the research relating memory to language has



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been conducted with this group. The goal is to establish the degree to which the findings support a relation between the proposed precursor and language abilities. The review spans a relatively long time period, since this issue was first addressed by Bates (1979). More recent research has redefined the relation to language of such abilities as tool use, object concept, symbolic gestures, and symbolic play, however, and some of this research needs to be evaluated. The impact of some developments on language has only recently been addressed sufficiently, namely prelinguistic vocalizations and memory.

In addition, each chapter begins with a review of findings with regard to the presence of the precursor in nonhuman primates. The focus, where possible, is on great apes in the wild, with some treatment of apes in captivity or in rehabilitation centers when important findings pertaining to the topic exist, for example, for tool use and delayed imitation. When research with apes is scarce, findings on monkeys are more extensively reviewed, for example, for sound–meaning correspondences and memory for lists. Although a few captive apes have been experimental subjects in the domains addressed by the book, recent experimental research has been heavily focused on monkeys. For this reason, the nonhuman primate studies cited cover a wide range of years in order to include some interesting early experiments with apes, as well as important older studies of ape vocalization in the wild.

The purpose of the review of nonhuman primate abilities is to clearly juxtapose them against the abilities of human infants to determine just where the similarities and dissimilarities lie. In some cases, there are few dissimilarities, whereas in others there are few similarities. Some believe that such comparisons are not useful, either because the species being compared are of different ages (often adult ape and human infant) or because such a comparison is anthropomorphic. For those of us who are interested in the roots of language, however, I think such a comparison is one that we continually make and that such a juxtaposition of findings can contribute to a clarification of the continuity issue.

Each chapter, then, progresses from observations on nonhuman primates with respect to the precursor, to its development in human infants, and finally to its relation to language. Chapter 6 is a separate discussion of the issue of representation in infants, and Chapter 7 deals with memory in nonhuman primates and the relation of memory to language in children. Chapter 8 is an attempt to evaluate various hypotheses about the origin of language in the light of the findings reviewed.

Many people contributed to the research cited in this book. The graduate students who worked on the Italian-Canadian infant project were Grace Borzellino Vitale, who collected all the data; Esther Olshansky, who coded the gestures; Silvana Macdonald, who coded the communication task and acted as general statistician; Patricia Osborne, who phonetically transcribed the vocalizations; Elizabeth Stevens, who assisted in the coding; and Debbie Mason, who calculated mean length of utterance for the speech samples. Debbie also provided the memory data for the older language-impaired children, and Connie Kushnir conducted the study of younger language-impaired children. Lorraine Chiasson provided some symbolic play data, and Robin Holloway contributed some findings on Piagetian tasks of means-ends and object permanence. Sheilah McConnell, an ethologist at heart, devised the original coding scheme for the gestures and did much of the original filming. Evelyn Vingilis and Georgia Quartaro collected the memory and language data in the early stages and transcribed the speech samples. Paula O'Rourke conducted the study of gestural development over the first year.

Many undergraduate students also assisted in various capacities: Roy Abraham, Wendy Austin, Marsha Cannon, Nancy Dranitsaris, Joanne Cleyn, Susan Dolgoy, Helen Downie, Gayle Horton, Amanda Lisus, Diane Massum, Shirley Messer, Joanne Messere, Nurit Nadler, Susan Onorati, Mary-Lynn Stordy, Anabel Vaughan, and Linda Woods. This book has clearly been a group effort.

Our first study, of the older English-Canadian infants, as well as the original research on memory and language, were supported by the National Sciences and Engineering Research Council of Canada. The study of French infants was funded by a fellowship from the Foundation Fyssen in Paris, while the study of Italian-Canadian infants was supported by the Mario Elia Fund. All of the research received funding from the Faculty of Arts at York University.

I am indebted to Suzanne MacDonald, Lorraine McCune, and Anne Russon for their comments on selected chapters. I am also indebted to Anne Russon for allowing me to use her wonderful photographs of orangutans. I am especially grateful to all the families in the longitudinal studies for their gracious reception during our many visits. Finally, I thank my family for their encouragement and their participation, both behind and in front of the camera.