

Erika Hoff



LANGUAGE ^{5e}
DEVELOPMENT

Language Development

FIFTH EDITION

ERIKA HOFF

Florida Atlantic University



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Erika Hoff

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Preface

To study language development is to consider the developing mind as it accomplishes one of its most astounding feats. I have tried, in this text, to introduce students to this field in a way that communicates both language development's content and its intellectual excitement. My aim is to introduce students to the questions that are asked by researchers, the evidence that has been collected to address these questions, and the conclusions derived from this evidence that constitute our current state of knowledge. Understanding the questions is crucial, because if students do not understand the questions, they are not likely to be interested in the research findings that constitute the current answers. Also, in many areas of research, the questions are likely to outlive the tentative answers that the field can provide at this time.

Many topics in the field of child language are hotly debated. I have tried to present a balanced treatment of contentious topics, presenting all sides of the arguments even if not remaining strictly neutral. My goal is to help students understand the different theoretical points of view in the field and the evidence and reasoning that lead some to argue for and others to argue—with equal vigor—against each point of view. I also believe it is important for students to understand the research process. In presenting the findings in each area, I have tried to summarize the results from a comprehensive review of the literature and to show students where findings come from by presenting selected, illustrative studies in greater methodological detail.

This book was written for advanced undergraduate students. It does not assume that the reader has a background in any particular discipline; therefore, it can be used in courses taught in departments of psychology, linguistics, education, and communicative disorders. The text should also be suitable for graduate courses—to be used as a background and framework for readings from primary sources. Although this book does not assume any prior linguistic knowledge, it does not allow its readers to remain in that state. Some understanding of work in linguistics is necessary both to appreciate the magnitude of what every child accomplishes in acquiring language and to understand the research that asks how children manage this accomplishment. I have made every effort, however, not to intimidate the reader who is not linguistically inclined and to present the research in such a way that readers who miss the linguistic details can still appreciate the gist of what questions are being asked and why, and what conclusions the researchers are drawing.

The central focus of this text is language development as a field of basic research, but applied issues are also considered. Chapter 1 provides an overview and history of the field, the central questions in the field, and the major theoretical approaches. Chapter 2 discusses the biological bases of language development, covering a wide range of topics, including the process of creolization, studies of brain injury and aphasia, the hypothesis of a critical period for language acquisition, studies of neurological correlates of language processing in intact children and adults, the genetics of language development, “wild children,” the communication systems of other species, attempts to teach language to chimpanzees, and the evolution of the capacity for language in humans. Chapter 3 describes the perceptual, social, and cognitive abilities of infants and young children that research increasingly shows are the foundational skills for language development. Chapter 3 also describes the language learning experiences that support language

development and the evidence that individual and group differences, including achievement gaps, arise from differences in children's access to those supportive experiences. Chapters 4 through 7 cover phonological development, lexical development, the development of syntax and morphology, and the development of communicative competence—including pragmatics and language socialization. Chapter 8 considers questions regarding the relation of culture, cognition, and language, including the effect of cultural practices on language development and the effect of language and language acquisition on cognition. Chapter 9 focuses on bilingual development, including discussion of bilingual education. Chapter 10 discusses the language developments that occur during the school years, including the acquisition of literacy. Chapter 11 examines language development in special populations. These populations include children who are deaf, children who are blind, children with intellectual disabilities, children with autism spectrum disorders, and children with specific language impairment.

New in the Fifth Edition

The fifth edition of *Language Development* represents a substantial revision of the previous edition. All the chapters have been updated. The increasing use of sophisticated methods in the field is reflected in an expanded treatment of neuroscience approaches in Chapter 2 and expanded discussion of studies that make use of eye-tracking methods, particularly in Chapters 5 and 6, on lexical and morphosyntactic development. The increasing prominence of usage-based approaches to understanding language and language acquisition is reflected in the Chapter 1 treatment of theories and in Chapter 6 on morphosyntactic development. To reflect and adequately present the growing evidence that the process of language acquisition relies on domain-general foundational skills and communicative experiences, there is a new chapter in this edition. Chapter 3 brings together material that had been in other chapters in previous editions and adds new material on early speech perception, domain-general learning processes, and the role of attention and memory in language development. There is also an expanded treatment of the role of the environment in language development. Chapters 9 and 10 contain new material on the topic of achievement gaps related to socioeconomic status and minority language use. Chapter 9 on bilingual development is substantially expanded, reflecting both the growing field and my own growing interest in the area. Chapter 11 on special populations includes new work on children with cochlear implants, children with fragile X syndrome, and children with autism spectrum disorders.

Also new to this edition is a package of supplementary materials, primarily designed to provide the instructor with additional educational and presentation tools when teaching from this text. Each chapter has been fully outlined in PowerPoint slides, which can be used as is or edited to reflect the instructor's specific goals. For each chapter there is a list of links to relevant websites and to movies available online, suggested student activities, and a testbank. The videos prepared specifically for this text, which are made available to instructors and students, have been augmented with new illustrations of concepts and new demonstrations of research procedures and findings.

Acknowledgments

It is a pleasure to publicly acknowledge those who contributed to this book's coming into being. I continue to owe a debt to Marilyn Shatz who first suggested, years ago, that I write a language development textbook. I am grateful to the many instructors and students who have found this textbook useful, and I am grateful for the colleagues, friends, and students who make the study of language development a great adventure. I owe thanks to Chahana Munshi and Stephanie Welsh, who helped with the bibliographic

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Erika Hoff

Language Development



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CHAPTER 1

Introduction to the Study of Language Development

Language and the Scientific Study of Language Development

- A Definition of Language
- A Chronological Overview of Language Development
- Reasons for the Scientific Study of Language Development

The History of the Study of Language Development

- Big Questions and Studies of Special Cases
- Baby Biographies
- Normative Studies
- The Chomskyan Revolution
- The Current Study of Language Development

Major Issues in the Field of Language Development

- What Are the Contributions of Nature and Nurture to Language Acquisition?
- Are the Mechanisms of Language Acquisition Language-Specific or Domain General?
- How Abstract Is Language?

- Is There Continuity or Discontinuity in Language Development?
- What Is the Relation Between Communication and Language?

Theories of Language Development

Methods of Research in Language Development

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- Research Designs and Procedures
- Assessment of Productive Language from Speech Samples
- CHILDES—A Data Archive
- Standardized Tests and Measures of Language Development
- Computational Modeling

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Key Terms

Review Questions

Somehow, in the span of just a few years, newborn infants who neither speak nor understand any language become young children who comment, question, and express their ideas in the language of their community. This change does not occur all at once. First, newborns' cries give way to coos and babbles. Then, infants who coo and babble start to show signs of comprehension such as turning when they hear their name. Infants then become toddlers who say "bye-bye" and "all gone" and start to label the people and objects in their environment. As their vocabularies continue to grow, children start to combine words. Children's first word combinations, such as *all gone juice* and *read me*, are short and are missing parts found in adults' sentences. Gradually, children's immature sentences are replaced by longer and more adultlike sentences. As children learn to talk, their comprehension abilities also develop, typically in advance of their productive speech. As children master language, they also become masters at using language to serve their needs. One-year-olds who can only point and fuss to request something become 2-year-olds who say "please"; later, they become 4-year-olds capable of the linguistic and communicative sophistication of the child who excused himself from a boring experiment by saying, "My mother says I have to go home now" (D. Keller-Cohen, January 1978, personal communication).

This book is about these changes. It is about the *what* and *when* of language development—what changes take place and when they occur in the course of language development. It is also about the *how* and *why*. How do children learn to talk, and why is the development of language a universal feature of human development? In the following chapters, we will delve into these topics in detail. In this chapter, we begin with an overview of the field we are about to study.

Language and the Scientific Study of Language Development

A Definition of Language

Language is the systematic and conventional use of sounds (or signs or written symbols) for the purpose of communication or self-expression (Crystal, 1995). This definition is short and simple, and, although true, it is misleading in its simplicity. Language is complex and multifaceted. The child who learns a language achieves the ability to recognize and produce a set of sounds and learns how these sounds can and cannot be combined into possible words. The child who learns English, for example, comes to know approximately 44 different consonants and vowels (Crystal, 1995) and that *pling* is a possible word but *gnilp* is not. By adulthood, the child who learns a language knows a vocabulary of tens of thousands of words. This vocabulary knowledge includes knowledge of each word's meaning and its possibilities for combination with other words. Adult speakers of English know, for example, that *give* and *donate* are synonyms, that *John gave a book to the library* and *John donated a book to the library* are perfectly fine sentences, that *John gave the library a book* is also fine, but that *John donated the library a book* is not. The child who learns a language also comes to know the multiple ways in which pieces of the language can and cannot be systematically combined to form words and sentences. *John kissed Mary* and *Mary kissed John* are both fine sentences, albeit with different meanings; *kissed* is made up of *kiss* + *ed*, and *Mary* + *ed John kiss* just does not work. The child who learns a language also comes to know how to combine sentences into larger units of discourse—to tell a story or have a conversation. As they learn a language, children learn to use that language to communicate in socially appropriate ways. They acquire the means to share their thoughts and feelings with others and the skill to do so differently with their peers and their grandparents. In a literate society, children also learn to use language in its written form. They master both a complex set of correspondences between written symbols and meanings and a literate style of language use. Many children, perhaps most of the world's children, hear and acquire more than one language (e.g., Grosjean, 2010), and there is no reason to think that monolingual development is more basic or natural for children than bilingual or multilingual development. One could argue that a text on language development should treat multilingualism as the norm and have one chapter on the special case of monolingual development. The history of the field, however, is that most of the research on language development has been conducted with children exposed to only one language. Studies of bilingual and multilingual development are fewer, although this is a rapidly growing research area. The organization of this text reflects the scientific literature in taking monolingual development as its focus and presenting research on bilingual development in a single chapter, Chapter 9.

Children develop knowledge in the different domains of language concurrently, and there are many ways in which knowledge in one domain is used in acquiring knowledge in another. It is useful, nonetheless, for researchers and for students of language development to make distinctions among the subcomponents of language. The sounds and sound system of a language constitute a language's **phonology**. The words and associated

BOX 1.1 Components of Oral Language Development

COMPONENT	DEFINITION	EXAMPLE
Pragmatics	The transmittal of information to others in socially appropriate ways	Being able to make requests, to comment, to be coherent in conversation and narrative
Phonology	The sound system of the language	Being able to distinguish between /vat/ and /bat/, recognizing that /narg/ could be an English word but that /ngar/ could not
Lexicon	Vocabulary and processes of derivational morphology	Knowing the meaning of words and how to form new words (e.g., if <i>narg</i> is a verb, then a <i>narger</i> is someone who nargs)
Morphology and syntax	The systems that govern inflectional morphology and word combination	Knowing the difference in meaning between <i>Man bites dog</i> and <i>Dog bites man</i> , knowing that <i>Man bite dog</i> and <i>Bite man dog</i> are both ungrammatical

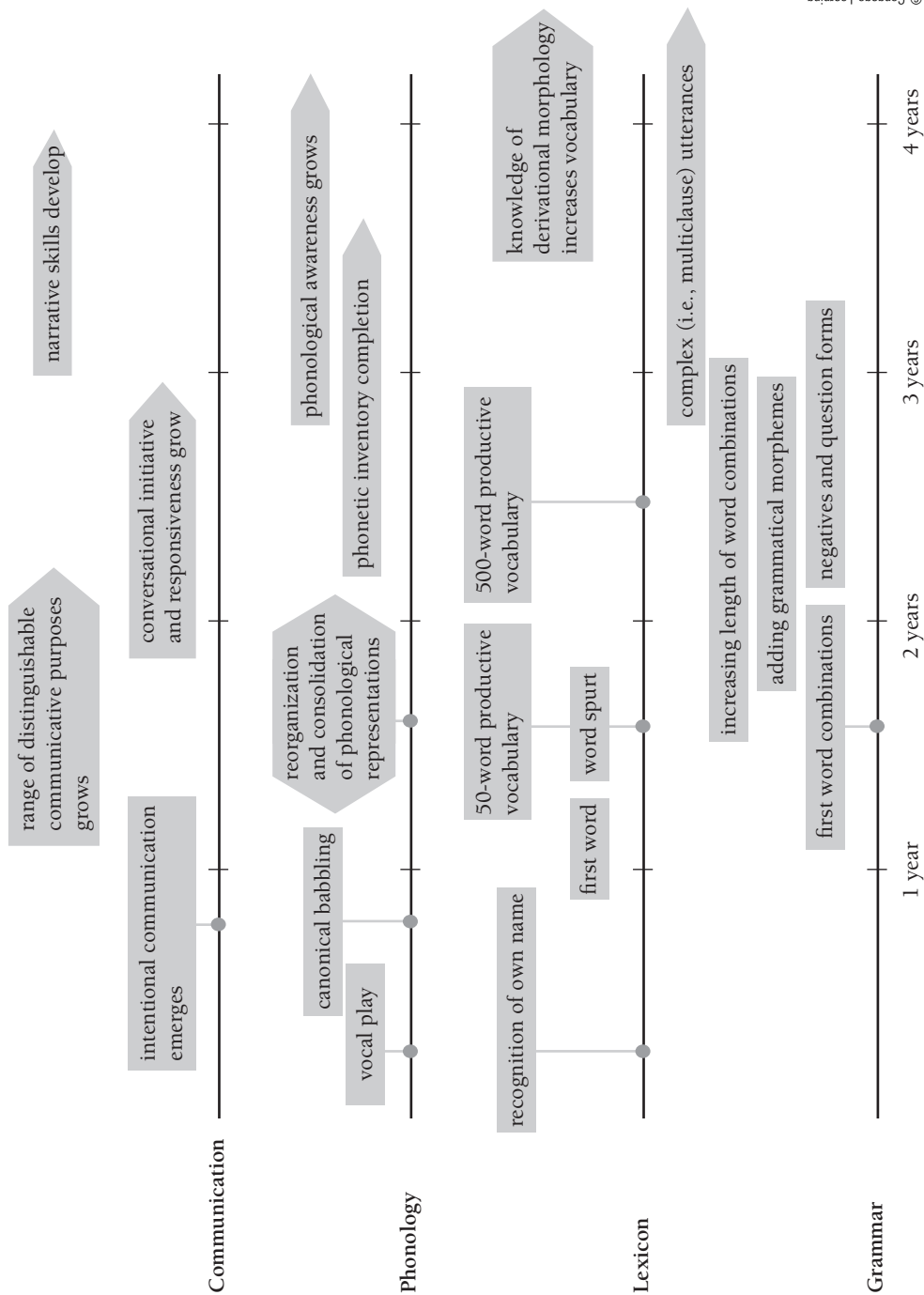
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knowledge are the **lexicon**. The system for combining units of meaning (words and parts of words such as *-ed*) is **morphology**; the system for combining words into sentences is **syntax**. The knowledge that underlies the use of language to serve communicative functions is knowledge of **pragmatics**, and the knowledge that allows the socially appropriate use of language is knowledge of **sociolinguistics**. Knowledge of reading and writing is referred to as **literacy**. We will define these components of linguistic knowledge further in later chapters; definitions of the components of oral language are presented in Box 1.1. Readers with some background in language development or linguistics may be surprised not to find semantic development listed here. Semantics is the study of meaning, and certainly learning a language is learning a system for expressing meaning. Much of what is usually subsumed under the heading of semantic development is word meaning, which is discussed in this text in Chapter 6 on lexical development. The meanings expressed in word combinations are discussed in Chapter 6 on the development of language structure.

A Chronological Overview of Language Development

In the chapters that follow, we will describe the course of language development in some detail and ask how children accomplish this remarkable feat. Here, as both overview and preview, we describe language development in broad outline, based on findings from the study of monolingual children. Figure 1.1 presents the major milestones of language development on separate timelines for each language component. If you scan all four timelines from left to right, you can see that from birth to one year, children change in the communicativeness of their behavior and in the repertoire of sounds they produce. They move from understanding no words at birth to recognizing their names by 6 months and understanding a few other words by 8–10 months. On average, children begin to produce speech at about 1 year. We know, however, that these seemingly pre-linguistic babies are learning a great deal about the sounds, the words, and even the grammatical properties of their language during the first year of life and that what babies learn in their first year is built upon in subsequent language development.

FIG-1-1 Major Milestones of Language Development



During children's second year, the most obvious development is in the domain of vocabulary. Children typically begin this year by producing their first word, and by the end of the year, they have a productive vocabulary of about 300 words and are producing word combinations (Fenson, Dale, Reznick, & Bates, 1994). Their words do not sound quite adultlike. Both articulation abilities and underlying phonological representations undergo changes during this second year. Children are also becoming more communicative. Both the frequency and the conversational relevance of their communicative acts increase.

During the third year of life, the most obvious development is children's increasing mastery of the grammar of their language. Typically, children start this year producing two- and three-word affirmative, declarative sentences that lack grammatical endings (e.g., plural markers and past-tense markers) on nouns and verbs. By the end of the third year, children produce full sentences, including questions and negated forms with most grammatical devices in place. Vocabulary continues to grow, articulation of sounds improves, and children begin to develop an awareness of the phonological properties of their language—as evidenced, for example, in their appreciation of rhymes. Children's conversational skills increase, and they begin to introduce short accounts of past events into their conversations.

The period from 3 to 4 years is largely one of refining and further developing the skills that are already in place. The most obvious new development occurs in the area of grammar, where children start to produce complex, multiclausal sentences. Because there is nothing completely missing from the linguistic competence of most 4-year-old children, it is commonly said that language acquisition is completed during the first four years of life. Although there is some truth to that statement, language skills continue to grow in every domain after the age of 4 years. Articulation, vocabulary, sentence structure, and communicative skills all develop. There are also major transitions involved as children move from a home to a school environment and learn new ways of using language; literacy development is further associated with changes in language knowledge. We will return to each of these developments in future chapters.

Reasons for the Scientific Study of Language Development

Language Development as a Basic Research Topic A child who has acquired language has acquired an incredibly complex and powerful system. If we understood how children accomplish this task, we would know something substantial about how the human mind works. The modern field of language development emerged in the 1950s when it became clear that language acquisition would serve as a test for rival theories of how change in human behavior occurs (H. Gardner, 1985; Pinker, 1984). In the 1950s, two psychological theories were pitted against each other: behaviorism and cognitivism.

Behaviorism holds that change in behavior occurs in response to the consequences of prior behavior. Most readers are familiar with clear examples supporting this view. For instance, rats that initially do not press levers come to press levers after receiving food pellets for producing behaviors that increasingly approximate lever pressing. Radical behaviorism holds that all behavior can be accounted for in this way. A central tenet of behaviorism is that it is not necessary to discern what goes on in the mind of the rat in order to explain the change in the rat's behavior; behavior can be fully accounted for in terms of things external to the mind.

Cognitivism asserts the opposite—that we cannot understand behavior without understanding what is going on inside the mind of the organism producing the behavior. From approximately 1930 to the early 1950s, behaviorism dominated American psychology. But in the 1950s, a “cognitive revolution” began (H. Gardner, 1985). During the next two decades, behaviorism came to be seen as inadequate, and the focus of the

search for explanations of human behavior shifted to internal mental processes. Studies of language played a crucial role in the cognitive revolution. The ability to speak and understand language is incredibly complex, and children acquire that ability without receiving positive reinforcement for successive approximations to grammatical sentences. Simple theories that may well explain why rats push levers, why dogs salivate at the sight of the people who feed them, and why humans get tense when they sit in the dentist's chair cannot explain how children learn to talk. When cognitivism displaced behaviorism, theoretical dispute concerning how to understand human behavior did not end. In fact, a new interdisciplinary field called **cognitive science** emerged from the cognitive revolution.

Cognitive scientists now agree that it is necessary to understand how the mind works in order to explain human behavior, but they do not agree on how the mind works. The study of language acquisition plays a central role in the debate over how to characterize human cognition, for the same reason that language acquisition played a central role in the cognitive revolution. That is, it is so difficult to explain how language acquisition is possible that accounting for language acquisition is a test not likely to be passed by inaccurate cognitive theories. Language acquisition is the New York City of the field of cognitive science: If you can make it there, you can make it anywhere.

Language Development as an Applied Research Topic The goal for many researchers who study language development is perhaps less grandiose than discovering how the mind works, but it is more immediate. Success in modern industrialized society depends on having good verbal skills, and acquiring the verbal skills that society requires is problematic for some children. For example, some minority children and some children from lower socioeconomic strata enter school with language skills that differ from those that mainstream, middle-class teachers expect. Many children enter school with limited skills in the language of instruction because they or their parents are immigrants, and the language they have learned at home is not the language used in school. A substantial area of research conducted by developmental psychologists, speech and communication scientists, and educators is aimed at understanding the nature of the language skills that characterize children from diverse backgrounds and identifying the best approaches to educating them.

For some children, acquiring adequate language skills is problematic because of other conditions, including intellectual disability, hearing impairment, or brain injury. Some children have difficulty acquiring language in the apparent absence of any other sort of impairment. A substantial body of research focuses on trying to understand the nature of the problems that underlie such children's difficulty and on finding techniques for helping these children acquire language skills.

The areas of basic and applied research in the study of language development are not wholly separate. There are important points of contact. For example, basic research on the process of normal language development is used to develop interventions to help children who have difficulty acquiring language (S. F. Warren & Reichle, 1992), and research on the processes involved in reading has provided the basis for successful reading interventions (Bus & van Ijzendoorn, 1999; Ehri et al., 2001; Lyytinen, Erskine, Aro, & Richardson, 2007). Sometimes work on language disorders also informs basic research. For example, evidence that children with autism acquire language structure even though they have severe communicative deficiencies suggests that learning language involves more than learning how to fulfill a need to communicate (Tager-Flusberg, 1994, 2007), and studies that find late talkers differ from typically developing children in other cognitive tasks suggest that multiple skills serve normal language development (Rescorla, 2009). There are also important points of contact among the various disciplines that

study language development. For example, anthropologists' descriptions of cultures in which no one talks to babies is relevant to the work of developmental psychologists who study how mother–infant interactions contribute to language development (Hoff, 2006b; Lieven, 1994).

The History of the Study of Language Development

Although the modern study of language acquisition began in the 1960s, the linguistic capacity of children has been a source of fascination since ancient times. One can find examples in history of many of the motives that prompt current investigations of children's language.

Big Questions and Studies of Special Cases

The Language in the Brain The first recorded language acquisition experiment was conducted by the ancient Egyptian King Psammetichus and described by the Greek historian Herodotus in the 4th century BC. The issue at hand concerned who among the peoples of the world represented the original human race. To resolve the issue, King Psammetichus ordered that two infants be raised in isolation by shepherds, who were never to speak in the children's presence. The idea behind this experiment was that the babies would start to speak on their own, and whatever language they spoke would be the language of the "original" people. According to Herodotus's account, one of the children said something like "becos" at the age of 2. *Becos*, as it turned out, was the Phrygian word for bread. In the face of this evidence, King Psammetichus abandoned his claim that the Egyptians were the oldest race of humans and concluded that they were second oldest, after the Phrygians.

Although the assumptions underlying that experiment seem slightly comical now, and the method of the experiment is certainly unethical, the idea of asking about the language the brain creates when it is not given an existing language to learn has not been discarded. Susan Goldin-Meadow has studied the gestural communication systems invented by deaf children born to hearing parents (Feldman, Goldin-Meadow, & Gleitman, 1978; Goldin-Meadow, 2003; Goldin-Meadow, Mylander, & Franklin, 2007). Because the children's parents do not know any sign language (and have been instructed not to learn or use any sign language in these cases, in accordance with the oralist method of instruction for the deaf), these deaf children are just as isolated from a language model as were the infants in King Psammetichus's experiment. Children in these circumstances invent "signs" and combine them in two- and three-sign sequences, suggesting that putting symbols together to communicate is something that naturally emerges in the course of human development. In Chapter 11, we will come back to the specifics of these findings and what they suggest.

"Wild Children" and the Nature of Humankind Occasionally, there are children who are not only linguistic isolates but also social isolates, and these unfortunate children afford science the opportunity to ask an even broader question: What is the intrinsic nature of humankind? This question was hotly debated in the 18th century. On the one hand, there had been a long tradition of argument by philosophers such as René Descartes (1662) that human nature (including having an immortal soul) was an innate endowment. On the other hand, philosopher John Locke (1690) argued that at birth the human mind was like a sheet of blank paper and that humans become what they become as a result of society's influence. What was needed to settle this question was a human raised outside of society. Such a human appeared in the winter of 1800.