ENCYCLOPEDIA
on Early Childhood
Development

Language Development at an Early Age: Learning Mechanisms and Outcomes from Birth to Five Years

Erika Hoff, PhD

Department of Psychology, Florida Atlantic University, USA

October 2009

Introduction

The acquisition of language is one of the more remarkable achievements of early childhood. By age 5, children essentially master the sound system and grammar of their language and acquire a vocabulary of thousands of words. This report describes the major milestones of language development that typically-developing, monolingual children achieve in their first 5 years of life and the mechanisms that have been proposed to explain these achievements.

Subject

Young children's language skills are important to their interpersonal and academic success.[1,2] It is therefore crucial to have descriptions of normative development that allow identification of children with language impairment and to have an understanding of the mechanisms of language acquisition that can provide a basis for optimizing all children's development.

©2009-2026 ABILIO | LANGUAGE DEVELOPMENT AND LITERACY

Problem

Although all normal children in normal environments acquire the language (or languages) they hear, children's rates of development– and thus skill levels at any age– vary enormously. One goal of research in the field is to understand the roles of innate abilities and environmental circumstances in explaining both the universal fact of language acquisition and the variability in language development.[3]

Research context

Children's language development has been a topic of interest since antiquity and the focus of substantial scientific research since the 1960s.[4] Although the field has broadened its scope of inquiry in recent years, there is still more research that describes middle-class, monolingual children acquiring English than other groups and other languages.

Recent Research Results

The course of language development and its underlying mechanisms are usually described separately for the subdomains of phonological development (the sound system), lexical development (the words), and morpho-syntactic development (grammar), although these domains are interrelated both in language development and in language use.

Phonological development. Newborns have the ability to hear and discriminate speech sounds.[5] During the first year, they become better at hearing the contrasts their language uses, and they become insensitive to acoustic differences that are not relevant to their language. This tuning of speech perception to the ambient language is the result of a learning process in which infants form mental speech sound categories around clusters of frequently-occurring acoustic signals. These categories then guide perception such that within category variation is ignored and between category variation is attended to.[6,7]

The first sounds infants produce are cries and noises that are not speech-like. The major milestones of pre-speech vocal development are the production of canonical syllables (well-formed consonant + vowel combinations), which appear between 6 and 10 months, followed shortly by reduplicated babbling (repetitions of syllables). When first words appear, they make use of the same sounds, and they contain the same numbers of sounds and syllables, as the preceding babbling sequences.[8] One process that contributes to early phonological development appears to be infants' active efforts to reproduce the sounds they hear. In babbling, infants may be discovering the correspondence between what they do with their vocal apparatus and the

sounds that come out. The important role of feedback is suggested by findings that children with hearing impairment are delayed in achieving canonical babbling. At approximately 18 months, children appear to have achieved a mental system for representing the sounds of their language and producing them within the constraints of their articulatory abilities. At this point children's production of speech sounds becomes consistent across different words – in contrast to the earlier period when the sound form for each word was a separate mental entity.[9] The processes underlying this development are not well understood.

Lexical development. Infants understand their first word as young as 5 months, produce their first words between 10 and 15 months of age, reach the 50-word milestone in productive vocabularies around 18 months of age, and the 100-word milestone between 20 and 21 months.[10] After that, vocabulary development proceeds so rapidly that tracking the how many words children know becomes unwieldy. The vocabulary size of an average 6-year-old has been estimated at 14,000 words.[11]

The task of word learning has multiple components and recruits multiple mechanisms.[12] Infants make use of statistical learning procedures, tracking the probability that sounds appear together, and thereby segmenting the continuous stream of speech into separate words.[13] The capacity to store those speech sound sequences, known as phonological memory, comes into play as entries in the mental lexicon are created.[14] In the task of mapping a newly-encountered word onto its intended referent, children are guided by their abilities to make use of socially-based inferencing mechanisms (i.e., speakers are likely to be talking about the things they are looking at),[15] by their cognitive understandings of the world (some word learning involved mapping new words onto pre-existing concepts),[16] and by their prior linguistic knowledge (i.e., the structure of the sentence in which a new word appears provides clues to word meaning).[17] Full mastery of the meanings of words may require new conceptual developments as well.[18]

Morpho-syntactic development. Children begin to put two, then three and more words together into short sentences at approximately 24 months of age. Children's first sentences are combinations of content words and are often missing grammatical function words (e.g., articles and prepositions) and word endings (e.g., plural and tense markers). As children gradually master the grammar of their language, they become able to produce increasingly long and grammatically complete utterances. The development of complex (i.e., multi-clause) sentences usually begins some time before the child's second birthday and is largely complete by age 4. In general, comprehension precedes production.[4]

The mechanism responsible for grammatical development is one of the mostly hotly-debated topics in the study of child language. It is argued that children come to the language-learning

task equipped with innate knowledge of language structure and that language could not be achieved otherwise. It is also clear, however, that children have the ability, even in infancy, to detect abstract patterns in the speech they hear,[19] and there is very strong evidence that children who hear more speech and who hear structurally more complex speech acquire grammar more rapidly than do children with less experience[3,20] – which suggests that language experience plays a substantial role in language development.

Research Gaps

One gap or disconnect in the field is between the theoretically-driven quest to account for the universal fact of language acquisition and the applied need to understand the causes of individual differences in language development. Relatedly, there is less research on minority populations and on bilingual development than on monolingual development in middle-class samples. This is a serious gap because most standardized assessment tools are not suited to identifying organically-caused delay in minority children, in children from low socioeconomic strata, or in children acquiring more than one language.

Conclusions

The course of language development is very similar across children and even across languages, suggesting a universal biological basis to this human capacity. The rate of development varies widely, however, depending both on the amount and nature of children's language experience and on children's capacities to make use of that experience.

Implications

Normally-endowed children need only to experience conversational interaction in order to acquire language. Many children, however, may not experience enough conversational interaction to maximize their language development. Parents should be encouraged to treat their young children as conversational partners from infancy. Educators and policy makers should realize that children's language skills reflect not only their cognitive abilities but also the opportunities to hear and use language their environments have provided.

References

1. Black B, Logan A. Links between communication patterns in mother-child, father-child, and child-peer interactions and children's social status. *Child Development* 1995;66(1):255-271.
2. Morrison F, Bachman H, Connor C. *Improving literacy in America: Guidelines from research*. New Haven: Yale University Press; 2005.

3. Hoff E. How social contexts support and shape language development. *Developmental Review* 2006;26(1):55-88.
4. Hoff E. *Language development*. 4th ed. Belmont, CA: Wadsworth Cengage Learning; 2009.
5. Aslin RN, Jusczyk PW, Pisoni D. Speech and auditory processing during infancy: Constraints on and precursors to language. In: Damon W, ed-in-chief. *Handbook of child psychology*. 5th Ed. New York: John Wiley & Sons; 1998: 147-198. Kuhn D, Siegler RS, eds. Cognition, perception, and language.Vol 2.
6. Kuhl PK, Conboy B, Padden D, Nelson T, Pruitt J. Early speech perception and later language development: Implications for the "critical period." *Language Learning and Development* 2005;1(3-4):237-264.
7. Werker JF, Curtin S. PRIMIR: A developmental framework of infant speech processing. *Language Learning and Development* 2005;1(2):197-234.
8. Fagan MK. Mean Length of Utterance before words and grammar: Longitudinal trends and developmental implications of infant vocalizations. *Journal of Child Language* 2009; 36(3):495-527.
9. Stoel-Gammon C, Sosa AV. Phonological development. In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development.* Oxford, U.K.: Blackwell Publishing Ltd; 2007: 238-256.
10. Pine J M. Variation in vocabulary development as a function of birth order. *Child Development* 1995;66(1):272-281.
11. Templin M. *Certain language skills in children, their development and interrelationships.* Minneapolis, MN: University of Minnesota Press, 1957.
12. Diesendruck, G. Mechanisms of word learning. In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development.* Oxford, U.K.: Blackwell Publishing Ltd; 2007: 257-276.
13. Saffran JR, Thiessen ED. Domain-general learning capacities. In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development.* Oxford, U.K.: Blackwell Publishing LTD; 2007: 68-86.
14. Gathercole SE. Nonword repetition and word learning: The nature of the relationship. *Applied Psycholinguistics* 2006;27(4):513-543.
15. Baldwin D, Meyer M. How inherently social is language? In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development*. Oxford, U.K.: Blackwell Publishing Ltd; 2007: 87-106.
16. Poulin-Dubois D, Graham SA. Cognitive processes in early word learning. In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development.* Oxford, U.K.: Blackwell Publishing Ltd; 2007: 191-211.
17. Naigles LR, Swensen LD. Syntactic supports for word learning In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development*. Oxford, U.K.: Blackwell Publishing Ltd; 2007: 212-232.
18. Carey S. *The origin of concepts*. New York, NY : Oxford University Press; 2009.
19. Gerken L. Acquiring linguistic structure. In: Hoff E, Shatz M, eds. *Blackwell Handbook of Language Development*. Oxford, U.K.: Blackwell Publishing Ltd; 2007: 173-190.
20. Vasilyeva M, Waterfall H, Huttenlocher J. Emergence of syntax: Commonalities and differences across children. *Developmental Science* 2008;11(1):84-97.