

Contents

Preface	XV
CHAPTER 1	
Introduction to the Study of Language Development	3
Language and the Scientific Study of Language Development 4	
A Definition of Language 4	
A Chronological Overview of Language Development 5	
Reasons for the Scientific Study of Language Development 7	
Language Development as a Basic Research Topic 7	
Language Development as an Applied Research Topic 8	
The History of the Study of Language Development 9	
Big Questions and Studies of Special Cases 9	
The Language in the Brain 9	
“Wild Children” and the Nature of Humankind 9	
Baby Biographies 10	
Normative Studies 11	
The Chomskyan Revolution 11	
The Current Study of Language Development 12	
Current Topics 12	
Current Approaches 12	
Major Issues in the Field of Language Development 15	
What Are the Contributions of Nature and Nurture to Language Acquisition? 16	
The Nativist View 16	
The Interactionist View 16	
Are the Mechanisms of Language Acquisition Language-Specific or Domain General? 18	
How Abstract Is Language? 18	
Is There Continuity or Discontinuity in Language Development? 18	
What Is the Relation Between Communication and Language? 19	
Formalist Views 19	
Functionalist Views 19	
Theories of Language Development 20	
Methods of Research in Language Development 21	
Cross-Cultural and Cross-Linguistic Research 21	
Research Designs and Procedures 21	
Assessment of Productive Language from Speech Samples 22	
Speech Sample Collection 22	
Speech Sample Transcription 23	
Transcript Coding and Analysis 23	
CHILDES—A Data Archive 24	
Standardized Tests and Measures of Language Development 25	
Computational Modeling 26	

Sources for Research on Language Development	26
Journals	26
Indexes	28
CHAPTER 2	
Biological Bases of Language Development	31
Language as a Human Universal	31
Language Creation	32
Pidgins	32
Creoles	32
The Development of Nicaraguan Sign Language	33
The Common Basis of Language Creation and Acquisition	33
The Human Vocal Tract and Language	34
The Human Brain and Language	35
Some Basic Neuroanatomy	37
Methods of Neurolinguistic Investigation	37
Localization of Language Functions in the Brain	40
Language as a Left-Hemisphere Function	40
Right-Hemisphere Contributions to Language	41
Individual and Sex-Related Differences in Brain Organization	42
Other Neurological Divisions of Labor	42
Brain Development and Language Development	43
An Early Left-Hemisphere Specialization for Language	43
Evidence from Neuroimaging Studies	43
Evidence from Childhood Aphasia	44
Evidence from Cases of Brain Injury Prior to Language	44
The Basis of the Left-Hemisphere Specialization for Language	45
Neural Plasticity in Childhood	45
The Critical Period Hypothesis	46
First Language Acquisition After Infancy	47
"Wild" Children	47
The Case of Genie	47
Late Acquisition of American Sign Language	49
Second First Language Acquisition in Internationally Adopted Children	49
Second Language Acquisition	50
Age of Exposure Effects on Second Language Acquisition	50
Limitations on Second Language Acquisition in Childhood	52
Processes Underlying Age Effects on Second Language Acquisition	52
The Timing of Age-of-Exposure Effects on Language Acquisition	53
Age Effects on Mechanisms of Language Acquisition	53
Early Exposure Effects on a General Linguistic Ability	53
Changes in Domain-General Learning Mechanisms	54
Age-Related Changes in Opportunities to Learn Language	54
Social and Motivational Factors	55
The Genetic Basis of Language Development	56
The Heritability of Individual Differences	56
The Genetics of Language Impairment	57

Language and Other Species	58
The Natural Communication Systems of Other Species	58
What Constitutes a Language?	58
Communication Among Primates	58
The Birds and the Bees	59
The Acquisition of Human Language by Other Species	59
Efforts to Teach Chimpanzees to Speak	60
Signing Apes	60
Artificial Language Projects	63
Language in a Bonobo	64
Why Can't Chimpanzees Acquire Language?	65
The Origin of the Human Capacity for Language	67
Language as an Evolved Capacity	67
Language as a Module and an Adaptation	68
Language as the Modification of Other Cognitive Capacities	68
Language as Emergent from Other Cognitive and Social Capacities	69
Language as a By-Product of Evolution	69
CHAPTER 3	
Foundations of Language Development in Domain-General Skills and Communicative Experience	73
Social and Communicative Foundations of Language Development	74
The Communicative Function of Speech	74
Social Cognitive Skills of Infants	75
Joint Attention	75
Intention Reading	77
The Communicative Use of Gesture	78
Sensory and Perceptual Foundations of Language Development	80
Methods of Studying Infant Perception	80
Infant Hearing and Prenatal Learning	82
Early Attention to Speech and to Speakers	83
Infant Speech Perception	84
Infants' Discrimination of Speech Sounds	84
Categorical Perception	85
Early Tuning of Speech Perception	87
Cognitive Foundations of Language Development	89
Conceptual Understandings of the Meanings Language Encodes	90
Domain-General Mechanisms of Learning and Development	90
The Piagetian Account of Language Acquisition	91
Statistical Learning as the Mechanism of Language Acquisition	91
Rule Learning and Language Acquisition	92
Memory and Attentional Processes	94
Phonological Memory	94
Central Executive Function in Working Memory	95
Memory, Sleep, and Language Learning	95
The Relation of Early Foundational Skills to Later Language	96

Environmental Support for Language Development	97
Sources of Environmental Support	97
The Information Available in Speech	97
The Special Properties of Infant-Directed Speech	98
The Role of Feedback	100
The Role of Maternal Responsivity	101
The Relation of the Availability of Environmental Support to Language Acquisition	102
Input as a Source of Individual Differences in Language Development	102
Input as a Source of Differences in Language Development Related to Socioeconomic Status	103
CHAPTER 4	
Phonological Development: Learning the Sounds of Language	109
Phonological Knowledge in Adults	109
The Sounds of Language	109
What Are Speech Sounds?	109
How Do Speech Sounds Represent Meaning?	110
The Phonological Structure of Words	111
Phonotactics	111
Phonological Rules	111
Describing Speech Sounds	113
Phonetics	113
Phonemics	113
Phonetic Features	113
Prelinguistic Speech Sound Development	116
Stages of Prespeech Vocal Development	116
Reflexive Crying and Vegetative Sounds	116
Cooing and Laughter	116
Vocal Play	116
Reduplicated Babbling	117
Nonreduplicated Babbling	117
Influence of the Target Language on Babbling	117
Speech Sounds at the End of the Babbling Stage	119
The Transition from Babbling to Words	119
Processes Underlying Infants' Development of Speech Sounds	120
Biological Processes	120
Experience	120
Phonological Development Once Speech Begins	121
Word Recognition	121
Word Learning	122
Word Production	123
First Words	123
The Development of Phonological Processes	124
General Patterns of Phonological Development	125
Cross-Linguistic Differences in Phonological Development	127
Individual Differences in Phonological Development	127
The Relation Between Perception and Production	128
The Development of Phonological Awareness	128
The Relation Between Phonological and Lexical Development	128

Explanations of Phonological Development	130
Behaviorist Theory	130
Universalist Approaches	131
Biologically Based Theories	131
Usage-Based Phonology	132
The Connectionist Approach	132
CHAPTER 5	
Lexical Development: Learning Words	137
Lexical Knowledge in Adults	137
The Mental Lexicon	137
What Is a Word?	137
The Course of Early Lexical Development	138
First Words	138
First Words May Be Context Bound	138
Is There a Prelexical Stage of Word Use?	139
First Words Can Also Be Referential	139
Why Are Some Words Context Bound and Others Referential?	139
Context-Bound Words Become Decontextualized	140
Vocabulary Development from First Words to 50 Words	140
Vocabularies at the 50-Word Mark	142
The Content of Children's 50-Word Vocabularies	142
What Determines the Content of Early Vocabularies?	142
Overextensions and Underextensions of First Words	143
The Word Spurt	144
What Is the Word Spurt?	145
What Causes Changes in Word-Learning Efficiency?	146
Word Comprehension	146
Word Processing	147
Individual Differences in Lexical Development	148
Individual Differences in Language Style	148
First Words	148
Referential and Expressive Language Users	149
Individual Differences in the Rate of Lexical Development	150
Environmental Factors That Influence the Rate of Lexical Development	152
Child Factors That Influence the Rate of Lexical Development	152
The Process of Word Learning	153
Word Segmentation	153
Word-Referent Mapping	155
Lexical Constraints on Referent Mapping	155
Pragmatic Bases of Word Learning	156
General Attention and Learning Processes as the Basis of Word Learning	157
Input as a Source of Support for Learning Word Meaning	157
Cross-Situational Information as a Clue to Word Meaning	157
Syntax as a Clue to Word Meaning	158
Word Extension	160
Word Form Encoding	162
Learning Semantic Organization	163

CHAPTER 6	
The Development of Syntax and Morphology: Learning the Structure of Language	169
Some Features of Adults' Knowledge of Language Structure	169
The Productivity of Language	169
Syntax	170
Morphology	172
Descriptive versus Prescriptive Rules	174
Grammatical Development: Evidence in Language Production	174
The Transition from One-Word Speech	175
Vertical Constructions	175
Unanalyzed Word Combinations and "Word + Jargon" Combinations	175
Early Syntax	175
Two-Word Combinations	175
Three-Word and More Combinations	178
The Telegraphic Nature of Early Combinatorial Speech	179
Morphological Development	179
Morphological Development in Children Acquiring English	179
Morphological Development in Children Acquiring Languages Other than English	181
The Development of Different Sentence Forms	181
Expressing Negation	182
Asking Questions	182
Using Passive Forms	183
Producing Complex Sentences	184
Individual Differences in Grammatical Development	184
Measuring Grammatical Development from Spontaneous Speech	186
Grammatical Development: Evidence in Language Comprehension	188
Strategies Children Use	188
Children's Comprehension of Sentence Structure	189
Understanding Word Order	189
Early Comprehension of Grammatical Morphemes	189
Comprehension of Underlying Structural Relations	190
Difficulties Understanding Coreference Relations in Complex Sentences by Older Children	191
Sometimes Production Precedes Comprehension	192
Processes of Sentence Comprehension	192
Other Approaches to Studying Grammatical Development	193
Describing Children's Grammatical Understandings	193
Contrasting Theoretical Approaches	193
The Case for Limited Early Syntactic Understandings	193
The Case for Early Abstract Grammar	195
Evidence of Productivity in Spontaneous Speech	195
Overregulation and Overgeneralization Errors	195
Other Evidence of Early Productivity	196
The Case for Multiple Systems	196
Explaining the Acquisition of Grammar	198
Generativist (i.e., Nativist) Approaches	198
Semantic Bootstrapping	198
Parameter Setting	199

Constructivist Approaches	200
Models of Language Induction	200
The Lexical Basis of Grammatical Development	200
Is Grammar Innate?	201
Is There Continuity or Discontinuity in Grammatical Development?	201
CHAPTER 7	
Communicative Development: Learning to Use Language	205
Components of Adults' Communicative Competence	206
Pragmatics	206
Intentionality	206
Form-Function Mappings and the Role of Context	207
Discourse	207
Sociolinguistics	208
Registers	208
Cultural Variation in Language Use	208
Pragmatic Development	209
The Development of Speech Acts	209
The Expanding Range of the Communicative Functions of Speech	211
The Development of Conversational Skill	213
Piaget's Description of the Egocentric Child	214
Private Speech	214
Solitary Monologues	214
Vygotsky's Theory of the Function of Private Speech	215
Early Conversational Skills in Interaction with Adults	216
Responding to Speech	216
Differential Responding to Different Utterance Types	217
Initiating Topics	217
Repairing Miscommunication	218
Sustaining Dialogue and Contingent Responding	219
The Role of the Adult	221
Young Children's Peer Conversations	221
Narrative Development	223
The Conversational Origin of Narratives	223
Adults' Scaffolding of Children's Narratives	223
Developmental Changes in Children's Narratives	225
Sociolinguistic Development	226
Learning to Produce Situationally Appropriate Language	226
The Egocentric Child	226
Children's Use of Request Forms	227
Politeness	227
Children's Child-Directed Speech	228
Children's Understanding of Register	231
Early Gender-Typed Language Use	231
Influences on Communicative Development	233
The Origin of Communicative Intent and the Development of Communicative Functions	233
Influences on the Development of Discourse Skill	234
Influences on the Development of Situationally Appropriate Language Use	234

CHAPTER 8	
Language, Culture, and Cognition in Development	239
Language and Culture 239	
Linguistic and Cultural Influences on Language Development	239
Language Socialization	242
Language and Cognition: Possible Relations 243	
Language as an Expression of Independent Cognition	244
Language and Cognition as Tandem Developments: The “Theory Theory”	244
Language as an Influence on “Thinking for Speaking”	246
Language as a Source of Cognition-Advancing Information	247
Language as Providing the Categories of Thought: The Whorfian Hypothesis	248
Language as the Medium of Thought	249
Modern Tests of the Whorfian Hypothesis 249	
Number Words and Numerical Cognition	249
Analogical Reasoning	250
Autobiographical Memory	251
Nouns, Verbs, and the Development of the Meanings They Encode	251
The Effects of Gender Marking in Language on Nonlinguistic Concepts	252
The Encoding of Spatial Relations in Language and Thought	253
The Representation of Motion in Language and Cognition	254
Relations Between Language and the Development of Theory of Mind	255
CHAPTER 9	
Childhood Bilingualism	261
The Social Circumstances of Childhood Bilingualism	261
Bilingual Development as a Topic of Study 263	
History	263
The Current Field	263
Bilingual First Language Acquisition 264	
Language Differentiation in Bilingual Development	264
Phonological Differentiation	265
Lexical Differentiation	267
Morphosyntactic Differentiation	268
Effects of Bilingualism on Language Development	269
Effects on the Course of Language Development	269
Effects on the Rate of Language Development	269
Sources of Variability in Bilingual Development	271
Variable Properties of Bilingual Environments	271
Effects of the Balance of Dual Language Exposure on Bilingual Development	272
Effects of Properties of Dual Language Exposure on Bilingual Development	273
Second Language Acquisition in Childhood 274	
The Course of Second Language Acquisition in Childhood	274
The Process of Second Language Acquisition in Childhood	276
Influences on Second Language Acquisition in Childhood	277
Characteristics of Children That Influence Second Language Learning	277
The Sociocultural Environment and Second Language Learning	278
Language Attrition	279
Bilingual Language Use: Code Switching	279
Cognitive Consequences of Bilingualism for Children	280

The Bilingual Brain 282

Educating Bilingual Children 284

 Contexts and Types of Bilingual Education 284

 The French Immersion Program in Canada 285

 Educating Bilingual Children in the United States: History and Current Practice 286

 Outcomes of Education Programs for Bilingual Children in the United States 287

Do Language Skills Transfer? 289

CHAPTER 10

Language in the School Years 293

Oral Language Development in the School Years 294

 Phonological Development 294

Accent and Dialect Changes 294

The Development of Phonological Awareness 295

 Lexical Development 296

Changes in Vocabulary Size, Quality, and Use 296

Learning Word Formation Processes 297

Word-Learning Processes 301

 Morphosyntactic Development 301

Sentence-Level Developments 301

Discourse-Level Developments 302

 Developing Conversational Skill and Style 302

Changes in Conversational Skill 302

Developing a Gender-Typed Conversational Style 303

 Developing Narrative Skill 306

Properties of a Good Narrative 306

Types of Narratives and Developmental Changes in Children’s Narratives 306

 Developing Speaking and Listening Skills 309

Comprehension Monitoring 309

Message Repair 309

The Course of Communicative Skill Development 310

 Developing Nonliteral Uses of Language 311

Oral Language and Schooling 311

 Schooling Effects on Language Development 312

 Teacher Effects on Children’s Language Development 313

 Effects of Cultural Mismatches between Home and School 313

The Foundations of Literacy 314

 Oral Language and Literacy 314

Literacy and Human Nature 314

Phonological Skills and Reading 315

Vocabulary, Grammar, and Reading 315

Language Use and Reading 316

 Early Experience and Literacy 317

Learning to Read 321

 The Reading Process 321

 Individual Differences in Reading Skill 322

Environmental Sources of Reading Difficulty 322

Biological Factors in Reading Disorders 323

The Neurobiology of Reading and Reading Disorders 325
 Reading Instruction—The Reading Wars 325

CHAPTER 11

Language Development in Special Populations 329

Why Study Special Populations? 329

Language Development in Deaf Children 330

The Acquisition of Sign Language 331

Sign Languages Are Real Languages 331

The Course of Sign Language Development 332

The Timing of Sign Language Development 333

Oral Language Development in Deaf Children 333

Communicative Development 334

Phonological Development 334

Lexical Development 334

Syntactic Development 334

The Creation of Home Sign Systems by Deaf Children 335

Oral Language Development in Deaf Children with Cochlear Implants 336

Implications of Research on Language Development in Deaf Children 337

Language Development in Children Who Are Blind 338

Language Development in Children with Intellectual Disabilities 339

Language Development in Children with Down Syndrome 340

Language Development in Children with Williams Syndrome 342

Language Development in Children with Fragile X Syndrome 345

Case Studies of Individuals with Intellectual Disability Who Have High-Level Language Skills 345

Language Development in Children with Autism Spectrum Disorders 347

Language Development in Children with Specific Language Impairment 349

Who Is “Specifically Language Impaired”? 349

Characteristics of Language Development in Children with Specific Language Impairment 349

Developmental Delay 349

Delay or Deviance? 350

Asynchrony 351

What Causes Specific Language Impairment? 352

Auditory Processing Explanations of SLI 352

Phonological Memory and SLI 352

Nonlinguistic Cognition in Children with SLI 352

Language Faculty Accounts of Specific Language Impairment 353

The Language Environment of Children with SLI 353

The Neurobiology and Genetics of Specific Language Impairment 354

What Is Specific Language Impairment? 356

Glossary 358

References 372

Name Index 431

Subject Index 449