The Cambridge Handbook of Child Language, second edition

The most authoritative resource for students and researchers, The Cambridge Handbook of Child Language has been thoroughly updated and extended. Enhancements include new chapters on the acquisition of words, processing deficits in children with Specific Language Impairment and language in children with Williams syndrome. New chapters on bilingualism and autism, a refocused discourse chapter on written narratives and a new section on reading and reading disorders are also included, cementing the handbook’s position as the best study of the subject available. This wide-ranging survey traces language development from prelinguistic infancy to adolescence in typical and atypical contexts. The material is intuitively grouped into six thematic sections, enabling readers to find specific in-depth information easily. Surveying topics as varied as statistical learning, bilingualism and the neurobiology of reading disorders, this multi-disciplinary Handbook is an essential reference for students and researchers in linguistics, psychology, cognitive science, speech pathology, education and anthropology.

Edith L. Bavin is Professor in the School of Psychology and Public Health at La Trobe University, Victoria.

Letitia R. Naigles is Professor of Psychology at the University of Connecticut.
CAMBRIDGE HANDBOOKS IN LANGUAGE AND LINGUISTICS

Genuinely broad in scope, each handbook in this series provides a complete state-of-the-field overview of a major sub-discipline within language study and research. Grouped into broad thematic areas, the chapters in each volume encompass the most important issues and topics within each subject, offering a coherent picture of the latest theories and findings. Together, the volumes will build into an integrated overview of the discipline in its entirety.

Published titles

The Cambridge Handbook of Phonology, edited by Paul de Lacy
The Cambridge Handbook of Endangered Languages, edited by Peter K. Austin and Julia Sallabank
The Cambridge Handbook of Sociolinguistics, edited by Rajend Mesthrie
The Cambridge Handbook of Pragmatics, edited by Keith Allan and Kasia M. Jaszczolt
The Cambridge Handbook of Language Policy, edited by Bernard Spolsky
The Cambridge Handbook of Second Language Acquisition, edited by Julia Herschenson and Martha Young-Scholten
The Cambridge Handbook of Biolinguistics, edited by Cedric Boeckx and Kleanthes K. Grohmann
The Cambridge Handbook of Generative Syntax, edited by Marcel den Dikken
The Cambridge Handbook of Communication Disorders, edited by Louise Cummings
The Cambridge Handbook of Stylistics, edited by Stockwell and Whiteley
The Cambridge Handbook of Linguistic Anthropology, edited by Enfield, Kockelman and Sidnell
The Cambridge Handbook of English Corpus Linguistics, edited by Douglas Biber and Randi Reppen
The Cambridge Handbook of Bilingual Processing, edited by John W. Schwieter
The Cambridge Handbook of Learner Corpus Research, edited by Granger, Gilguin and Meunier

Further titles planned for the series

The Cambridge Handbook of Morphology, edited by Hippisley and Stump
The Cambridge Handbook of Historical Syntax, edited by Ledgeway and Roberts
The Cambridge Handbook of Formal Semantics, edited by Maria Aloni and Paul Dekker
The Cambridge Handbook of English Historical Linguistics, edited by Merja Kytö and Paivi Pahta
The Cambridge Handbook of Linguistic Multicompetence, edited by Li Wei and Vivian Cook
The Cambridge Handbook of Areal Linguistics, edited by Raymond Hickey
The Cambridge Handbook of Child Language
Second edition

Edited by

Edith L. Bavin and Letitia R. Naigles
Contents

List of figures vii
List of tables ix
List of contributors x
Acknowledgements xii

1. Introduction: perspectives on child language Letitia R. Naigles and Edith L. Bavin 1

Part I Theoretical and methodological approaches 13
2. Innateness and learnability Virginia Valian 15
3. Statistical learning Erik Thiessen and Lucy Erickson 37
4. Neurocognition of language development Angela D. Friederici and Michael A. Skeide 61
5. The usage-based theory of language acquisition Michael Tomasello 89
6. Crosslinguistic approaches to language acquisition Sabine Stoll 107

Part II Early developments 135
7. Speech perception Suzanne Curtin and Stephanie L. Archer 137
8. Crosslinguistic perspectives on segmentation and categorization in early language acquisition Barbara Höhle 159
9. From gesture to word Susan Goldin-Meadow 183

Part III Phonology, morphology and syntax 205
10. Babbling and words: a dynamic systems perspective on phonological development Marilyn M. Vihman, Rory A. DePaolis and Tamar Keren-Portnoy 207
11. The acquisition of prosodic phonology and morphology Katherine Demuth 230
12. The acquisition of grammatical categories Heike Behrens 250
13. Verb argument structure Shanley E. M. Allen 271
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>The first language acquisition of complex sentences</td>
<td>Barbara Lust, Claire Foley and Cristina D. Dye</td>
<td>298</td>
</tr>
<tr>
<td>15</td>
<td>The morphosyntax interface</td>
<td>Kamil Ud Deen</td>
<td>324</td>
</tr>
<tr>
<td>16</td>
<td>The acquisition of lexical meaning</td>
<td>Eve V. Clark</td>
<td>351</td>
</tr>
<tr>
<td>17</td>
<td>The acquisition of words</td>
<td>Susan A. Graham, Valerie San Juan and Ena Vukatana</td>
<td>369</td>
</tr>
<tr>
<td>18</td>
<td>Sentence scope</td>
<td>Stephen Crain</td>
<td>388</td>
</tr>
<tr>
<td>19</td>
<td>Sentence processing</td>
<td>Jesse Snedeker and Yi Ting Huang</td>
<td>409</td>
</tr>
<tr>
<td>20</td>
<td>Pragmatic development</td>
<td>Judith Becker Bryant</td>
<td>438</td>
</tr>
<tr>
<td>21</td>
<td>Language development and use beyond the sentence</td>
<td>Ruth A. Berman</td>
<td>458</td>
</tr>
<tr>
<td></td>
<td><strong>Part IV</strong> Semantics, pragmatics and discourse</td>
<td></td>
<td>349</td>
</tr>
<tr>
<td></td>
<td>22.</td>
<td>Language development in bilingual children</td>
<td>483</td>
</tr>
<tr>
<td></td>
<td>23.</td>
<td>Sign language acquisition studies</td>
<td>504</td>
</tr>
<tr>
<td></td>
<td>24.</td>
<td>Children with Specific Language Impairment (SLI)</td>
<td>527</td>
</tr>
<tr>
<td></td>
<td>J. Bruce Tomblin</td>
<td></td>
<td>545</td>
</tr>
<tr>
<td></td>
<td>25.</td>
<td>Language symptoms and their possible sources of Specific Language Impairment</td>
<td>564</td>
</tr>
<tr>
<td></td>
<td>Lisa M. D. Archibald and Nicolette B. Noonan</td>
<td></td>
<td>585</td>
</tr>
<tr>
<td></td>
<td>26.</td>
<td>Processing deficits in children with language impairments</td>
<td>609</td>
</tr>
<tr>
<td></td>
<td>27.</td>
<td>Language development in genetic disorders</td>
<td>637</td>
</tr>
<tr>
<td></td>
<td>28.</td>
<td>Language development in children with Williams syndrome: genes, modularity and the importance of development</td>
<td>659</td>
</tr>
<tr>
<td></td>
<td>29.</td>
<td>Language in children with autism spectrum disorders</td>
<td>661</td>
</tr>
<tr>
<td></td>
<td>Letitia R. Naigles and Iris Chin</td>
<td></td>
<td>681</td>
</tr>
<tr>
<td></td>
<td><strong>Part V</strong> Varieties of development</td>
<td></td>
<td>681</td>
</tr>
<tr>
<td></td>
<td>30.</td>
<td>Precursors to reading: phonological awareness and letter knowledge</td>
<td>703</td>
</tr>
<tr>
<td></td>
<td>31.</td>
<td>Reading disorders</td>
<td>724</td>
</tr>
<tr>
<td></td>
<td>32.</td>
<td>Predictors of reading skills across languages</td>
<td>740</td>
</tr>
<tr>
<td></td>
<td>33.</td>
<td>Neurobiology of reading disorders: implications of functional neuroimaging studies in dyslexia and specific reading comprehension deficits</td>
<td>763</td>
</tr>
<tr>
<td></td>
<td>34.</td>
<td>The development of reading comprehension skill: processing and memory</td>
<td>786</td>
</tr>
</tbody>
</table>

**References**

**Index**
Figures

4.1 The electroencephalogram (EEG) .................................................... 63
4.2 Schematic view of the left hemisphere of the human brain (adapted from Brodmann 1909) ............................................................... 65
4.3 The structural language network (Friederici 2011) ......................... 66
4.4 Language-specific mismatch responses at the age of 4 months (Friederici et al. 2007) ................................................................. 70
4.5 An early negativity underlying the phonological-lexical priming effect (adapted from Friedrich & Friederici 2004, 2005b) .......... 73
4.6 The N400 as an index of lexical-semantic processes (adapted from Friedrich & Friederici 2004, 2005b) .............................................. 76
4.7 The CPS (closure positive shift) as an index of processing intonational phrase boundaries (adapted from Friederici 2005 and Steinhauer et al. 1999) .................................................. 79
4.8 The ELAN-P600 pattern as an index of syntactic processes (adapted from Oberecker & Friederici 2006 and Oberecker et al. 2005) ...................... 81
4.9 BOLD activations underlying the processing of syntactic and semantic information in children aged 3–4, 6–7 and 9–10 years (Skeide, Brauer & Friederici 2014) ........ 84
4.10 A schematic overview of the developmental stages of auditory language perception and the ERP correlates that provide the possibility of investigating phonological, semantic and syntactic processes (adapted from Friederici 2006) ...................................................... 87
10.1 The matching of self- and other-produced vocal patterns to own production, supported by a familiar situational and/or verbal context, helps the infant to ‘choose’ relatively accurate first words .................................................. 214
19.1 A sketch of the processes involved in comprehending spoken language ................................................................. 410
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.2</td>
<td>Example of a display for the verb bias and prosody experiments</td>
<td>422</td>
</tr>
<tr>
<td>19.3a</td>
<td>Predictions for the between-verb conditions in the priming experiment: abstract structural representations</td>
<td>434</td>
</tr>
<tr>
<td>19.3b</td>
<td>Predictions for the between-verb conditions in the priming experiment: item-based frames</td>
<td>434</td>
</tr>
<tr>
<td>24.1</td>
<td>A model of principal causal systems that contribute to individual differences in language</td>
<td>537</td>
</tr>
<tr>
<td>28.1</td>
<td>These two sentences are superficially similar, but have different meanings. (Musolino, Chunyo &amp; Landau 2010)</td>
<td>623</td>
</tr>
<tr>
<td>28.2</td>
<td>Example of invented animal from Karmiloff-Smith et al. (1997), who tested French-speaking children’s ability to generate the correct morphology for novel nouns</td>
<td>632</td>
</tr>
<tr>
<td>32.1</td>
<td>Development of receptive and expressive language skills by late talking groups from the JLD project</td>
<td>708</td>
</tr>
<tr>
<td>32.2</td>
<td>Reading comprehension by groups at the end of the second grade in the JLD project (Lyytinen, Eklund &amp; Lyytinen 2005: 166–92)</td>
<td>709</td>
</tr>
<tr>
<td>32.3</td>
<td>The JLD-follow-up from birth to school age of reading-related development (Lyytinen, Erskine, Kujala, Ojanen &amp; Richardson 2009: 668–75)</td>
<td>711</td>
</tr>
<tr>
<td>32.4</td>
<td>Subgroup members’ average performance in the seven skills and in reading (Lei, Pan, Liu, McBride-Chang, Li, Zhang et al. 2011)</td>
<td>718</td>
</tr>
<tr>
<td>32.5a</td>
<td>The relationship between SES and reading</td>
<td>719</td>
</tr>
<tr>
<td>32.5b</td>
<td>Early phonology and vocabulary mediate the relationship between SES and reading (Zhang, Tardif, Shu, Li, Liu, McBride-Chang et al. 2013)</td>
<td>719</td>
</tr>
<tr>
<td>32.6</td>
<td>Scatter graph and vocabulary growth trajectories of the three subgroups (Song, Su, Kang, Liu, Zhang, McBride-Chang et al. 2015)</td>
<td>721</td>
</tr>
<tr>
<td>33.1</td>
<td>The hypothesized building blocks of reading (adapted from Scarborough 2001)</td>
<td>725</td>
</tr>
<tr>
<td>33.2</td>
<td>The three primary regions of interest in neuroimaging studies on dyslexia (adapted from Pugh 2000)</td>
<td>727</td>
</tr>
<tr>
<td>33.3</td>
<td>pVWFA: a region found to activate during rapid visual word recognition</td>
<td>729</td>
</tr>
<tr>
<td>33.4</td>
<td>Reading comprehension networks</td>
<td>737</td>
</tr>
</tbody>
</table>
Tables

10.1 First word forms: relative ‘accuracy’ and high variability 212
10.2 Later word forms: Jack’s CVVN pattern 223
10.3 Later word forms: Jack’s disyllabic <CVGlV> pattern 223
10.4 Later word forms: reduplication and harmony in Jack’s word shapes 224
14.1 Types of knowledge that must be integrated in complex sentences with complement clauses 303
14.2 Types of knowledge that must be integrated in complex sentences with coordination 309
14.3 Types of knowledge that must be integrated in complex sentences with adverbial clauses 313
14.4 Types of knowledge that must be integrated in complex sentences with relative clauses 316
15.1 Rate of omission of agreement and tense in Swahili 332
15.2 Rate of agreement errors in a range of languages 333
15.3 Hypothetical data set showing variation in error rates across files 333
15.4 Use of RIs and non-RIs 337
23.1 Age of acquisition of each structure 516
32.1 Developmental differences between JLD at-risk children with (N = 37) and without (N = 66) reading impairment as measured with reading related assessment at different ages 707
Contributors

Shanley Allen, Center for Cognitive Science, University of Kaiserslautern
Stephanie L. Archer, Department of Psychology, University of Warwick
Lisa Archibald, School of Communication Sciences and Disorders, University of Western Ontario
Edith L. Bavin, School of Psychology and Public Health, La Trobe University
Stephen Bailey, Vanderbilt Kennedy Center, Vanderbilt University
Judith Becker Bryant, Department of Psychology, University of South Florida
Heike Behrens, Englisches Seminar, University of Basel
Ruth A. Berman, Linguistics Department, Tel Aviv University
Anne Castles, Department of Cognitive Science, ARC Centre of Excellence in Cognition and its Disorders (CCD), Macquarie University
Iris Chin, Department of Psychology, University of Connecticut
Eve V. Clark, Department of Linguistics, Stanford University
Stephen Crain, ARC Centre of Excellence in Cognition and its Disorders (CCD), Macquarie University
Suzanne Curtin, Departments of Psychology and Linguistics, University of Calgary
Laurie E. Cutting, Vanderbilt Kennedy Center, Vanderbilt University
Kamil Ud Deen, Department of Linguistics, University of Hawai’i
Katherine Demuth, Department of Linguistics, ARC Centre of Excellence in Cognition and its Disorders (CCD), Macquarie University
Rory A. DePaolis, Communication Sciences and Disorders, James Madison University
Fiona Duff, Department of Experimental Psychology, University of Oxford
Cristina D. Dye, Centre for Research in Linguistics and Language Sciences, Newcastle University
Lucy Erickson, Psychology Department, Carnegie Mellon University
Claire Foley, Department of Slavic and Eastern Languages and Literatures, Boston College
Angela D. Friederici, Department of Neuropsychology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig
List of contributors

Susan Goldin-Meadow, Department of Psychology, University of Chicago
Susan Graham, Department of Psychology, University of Calgary
Erika Hoff, Department of Psychology, Florida Atlantic University
Barbara Höhle, Linguistics Department and Research Center of Cognitive Science, University of Potsdam
Yi Ting Huang, Department of Hearing and Speech Sciences, University of Maryland
Tamar Keren-Portnoy, Department of Language and Linguistic Science, University of York
Barbara Landau, Department of Cognitive Science, Johns Hopkins University
Nicole Landi, Department of Psychology, University of Connecticut and Haskins Laboratories
Laurence B. Leonard, Department of Speech, Language, and Hearing Sciences, Purdue University
Shevaun Lewis, Department of Cognitive Science, Johns Hopkins University
Diane Lillo-Martin, Department of Linguistics, University of Connecticut and Haskins Laboratories
Barbara Lust, Department of Human Development/Cognitive Science Program, Cornell University
Heikki Lyytinen, Department of Psychology, University of Jyväskylä
Eva Marinus, Department of Cognitive Science, ARC Centre of Excellence in Cognition and its Disorders (CCD), Macquarie University
Letitia R. Naigles, Department of Psychology, University of Connecticut
Nicolette Noonan, School of Communication Sciences and Disorders, University of Western Ontario
Fiona Richardson, Department of Psychology, Anglia Ruskin University
Ulla Richardson, Agora Center, University of Jyväskylä, Finland
Valerie San Juan, Department of Psychology, University of Calgary
Angela Sefcik, Vanderbilt Kennedy Center, Vanderbilt University
Hua Shu, Cognitive Neuroscience and Learning, Beijing Normal University
Michael A. Skeide, Department of Neuropsychology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig
Margaret Snedeker, Department of Psychology, Harvard University
Margaret Snowling, St Johns College, University of Oxford
Sabine Stoll, Psycholinguistics Research Unit, University of Zurich
Katherine Swett, Vanderbilt Kennedy Center, Vanderbilt University
Erik Thiessen, Psychology Department, Carnegie Mellon University
Michael Thomas, School of Psychology, Birkbeck College, University of London
Michael Tomasello, Department of Developmental and Comparative Psychology, Max Planck Institute for Evolutionary Anthropology, Leipzig
J. Bruce Tomblin, Child Language Research Center, University of Iowa
Virginia Valian, Psychology and Linguistics, Hunter College & CUNY Graduate Center
Julie A. Van Dyke, Haskins Laboratories
Marilyn Vihman, Department of Language and Linguistic Science, University of York
Ena Vukatana, Department of Psychology, University of Calgary
A volume of this nature would not be possible without the cooperation of and contributions from many people. The authors have done a fantastic job to help make this such a comprehensive work. They have been responsive to both the letter and spirit of our comments and suggestions. We would like to thank Andrew Winnard at Cambridge University Press for his input. Thanks also to the indexer, Fiona Barr, copy-editor, Kay McKechnie, production editors, Charlotte Thomas and Robert Judkins, and assistant editor, Bethany Gaunt. Katherine Creer, Candice Dunstan and Katherine Landy gave invaluable assistance in checking references and combining them into a master list. Finally, we acknowledge the enduring support and encouragement of our respective partners, Malcolm Macmillan and Mark Naigles.