

Child Language

ACQUISITION AND DEVELOPMENT

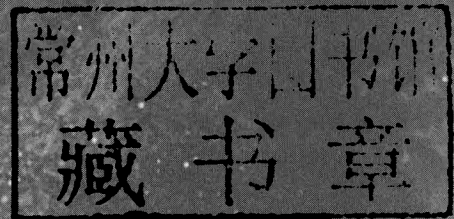
Matthew Saxton



Los Angeles | London | New Delhi
Singapore | Washington DC

Child Language

ACQUISITION AND DEVELOPMENT



Matthew Saxton

 SAGE

Los Angeles | London | New Delhi
Singapore | Washington DC

© Matthew Saxton 2010

First published 2010

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act, 1988, this publication may be reproduced, stored or transmitted in any form, or by any means, only with the prior permission in writing of the publishers, or in the case of reprographic reproduction, in accordance with the terms of licences issued by the Copyright Licensing Agency. Enquiries concerning reproduction outside those terms should be sent to the publishers.

SAGE Publications Ltd
1 Oliver's Yard
55 City Road
London EC1Y 1SP

SAGE Publications Inc.
2455 Teller Road
Thousand Oaks, California 91320

SAGE Publications India Pvt Ltd
B 1/I 1 Mohan Cooperative Industrial Area
Mathura Road
New Delhi 110 044

SAGE Publications Asia-Pacific Pte Ltd
33 Pekin Street #02-01
Far East Square
Singapore 048763

Library of Congress Control Number: 2009931934

British Library Cataloguing in Publication data

A catalogue record for this book is available from
the British Library

ISBN 978-1-4129-0231-1
ISBN 978-1-4129-0232-8 (pbk)

Typeset by C&M Digital (P) Ltd., Chennai, India
Printed and bound in Great Britain by TJ International Ltd, Padstow, Cornwall
Printed on paper from sustainable resources



Acknowledgements

I have had a huge amount of help and encouragement in the writing of this book from family, friends, colleagues at work, and colleagues in the wider world of child language research. People in my immediate orbit would have found it difficult to escape, but surprisingly few even made the attempt. For this, I am very grateful, because I benefited greatly from their input. It has also been gratifying to receive help from people further afield, some of whom I have yet to meet, but all of whom responded to my queries with considerable generosity of spirit. In particular, I should like to thank Ayhan Aksu-Koç, Ben Ambridge, Raymond Bertram, Robin Campbell, Alex Clark, Julie Dockrell, Holly Garwood, Jonathan Ginzburg, Margaret Harris, Josephine Howard, Jane Hurry, Dick Hudson, Sarah King, Mike Kirkman, Shalom Lappin, Evelyne Mercure, David Messer, Gary Morgan, Vicki Murphy, Maritza Rivera Gaxiola, Stuart Rosen, Jenny Saffran, Colin Saxton, Susan Sciamia, Morag Stuart, Mike Swan, Athena Vouloumanos, Catherine Walter and Dan Weiss. My partner, Gary Yershon, has been constant in his support: my reader, editor, counsel and inspiration. And my son, Alex, has graciously indulged the 'proud father' syndrome, which manifests in what follows in samples of his developing language.

Publisher's Acknowledgements

The author and publisher wish to thank the following for the permission to use copyright material:

We thank APA for granting us permission to reproduce:

- Baillargeon, R. (1987). Object permanence in 3½-month-old and 4½-month-old infants. *Developmental Psychology*, 23/5, 655–664. Fig. 1, p. 656.
- Ganger, J. & Brent, M.R. (2004). Reexamining the vocabulary spurt. *Developmental Psychology*, 40/4, 621–632. Fig. 1. A spurtlike function (logistic) superimposed on slightly modified data from Child 041B (p. 623). Fig. 2. A nonspurtlike curve (quadratic) superimposed on the same data shown in Figure 1, p. 623.

We thank Cambridge University Press for granting us permission to reproduce:

- Gershkoff-Stowe, L., Connell, B. & Smith, L. (2006). Priming overgeneralizations in two- and four-year-old children. *Journal of Child Language*, 33/3, 461–486. Figure 1, p. 464. Levels of processing and lexical competition involved in naming a perceived object.
- Dromi, E. (1987). *Early lexical development*. Cambridge: CUP. Figure 1, p. 111. Keren's cumulative lexicon at the one-word stage.
- Bates, E. & Goodman, J.C. (1997, p. 517, Fig. 2) in E. Bates, I. Bretherton & L. Snyder (1988). *From first words to grammar: Individual differences and dissociable mechanisms*. New York: Cambridge University Press.
- Smith, L.B. (2001). How domain-general processes may create domain-specific biases. In M. Bowerman & S.C. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 101–131). Cambridge: CUP. Figure 4.1. Sample stimuli from Landau, Smith & Jones (1988). All stimuli were three-dimensional objects made of wood, wire, or sponge.

We thank Elsevier for granting us permission to reproduce:

- A figure from Johnson, J.S. & Newport, E.L. (1989). Critical period effects in second language learning: the influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology*, 21/1, 60–99.
- Nicoladis, E. (2003). What compound nouns mean to preschool children. *Brain and Language*, 84(1), 38–49. Fig. 2. 'Sun bag' target for comprehension, p. 43.

Benasich, A.A., Choudhury, N., Friedman, J.T., Realpe-Bonilla, T., Chojnowska, C. & Gou, Z.K. (2006). The infant as a prelinguistic model for language learning impairments: Predicting from event-related potentials to behavior. *Neuropsychologia*, 44(3), 396–411. Fig. 1. Photograph of a 6-month-old child seated on his mother's lap during an ERP testing session using a dense array Geodesic Sensor Net system (Electric Geodesic, Inc., Eugene, Oregon, USA), p. 399.

We thank the Linguistic Society of America for granting us permission to reproduce Brooks, P.J. & Tomasello, M. (1999). How children constrain their argument structure constructions. *Language*, 75(4), 720–738. Figure 1. Novel 'directed motion' and 'manner of motion' verbs, p. 724.

We thank MIT Press for granting us permission to reproduce Hirsh-Pasek, K. & Golinkoff, R.M., *The Origins of Grammar: Evidence from Early Language Comprehension*, Figure 6.1, © 1996 Massachusetts Institute of Technology, by permission of the MIT Press.

We thank Wiley-Blackwell for granting us permission to reproduce:

Gertner, Y., Fisher, C. & Eisengart, J. (2006). Learning words and rules: Abstract knowledge of word order in early sentence comprehension. *Psychological Science*, 17/8, 684–691. Figure 1, p. 686.

Saffran, J.R. (2003). Statistical language learning: Mechanisms and constraints. *Current Directions in Psychological Science*, 12/4, 110–114. Figure 1, p. 111.

Fenson, L., Dale, P.S., Reznick, J.S., Bates, E., Thal, D.J. & Pethick, S.J. (1994). Variability in early communicative development. *Monographs of the Society for Research in Child Development*, 59/5. Figure 1, p. 35 and Figure 2, p. 38.

Notes on the Organization of this Book

This text is aimed principally at students of psychology with an interest in child language. It is suitable for use at undergraduate level, and also at postgraduate level, in cases where the field is new. In both cases, I am keenly aware that most psychology students have no prior training in linguistic theory. In fact, if you're like me – the member of a lost generation – you may not even have learnt very much about language at school. For this reason, I have tried to take nothing for granted as far as linguistic terminology is concerned, not even with common items like noun or verb. Of course, you can always skip over the linguistic interludes, if it's all old hat, and stick with the main event. Either way, the aim of this book is to equip you to appreciate more fully the arguments and evidence advanced in the study of child language. The following menu of pedagogic features should help sustain you on the journey ahead.

- Glossary of linguistic terms
Linguistic terms are highlighted in **bold** to indicate their appearance in the glossary, towards the end of the book. There you will find definitions of all things linguistic.
- Pronunciation guide: English phonemes
A list of the special symbols used to represent the consonant and vowel sounds of English. And yes, the terms *phoneme*, *consonant* and *vowel* all feature in the glossary.
- Boxes
Boxes have been used for two kinds of diversion from the main text: (1) to expand on essential terminology from linguistic theory; and (2) to provide extra information on key background concepts.
- References and further reading
As well as the list of references at the end of the book, I have ended each chapter with a few suggestions for further reading. These latter are annotated with potted reviews and notes.
- Website addresses
The internet has a stunning potential to make life easy for students (it already does in many ways). But with regard to reading material, articles found on the internet can be intrinsically unreliable. The crux of the matter is this: one cannot always tell,

with any certainty, who wrote a given internet article. Nor can one always be sure if the claims made in internet sources are reasonable, valid, and backed up by reference to genuine and appropriate research. I have been as careful as I can in my listing of websites, but approach with caution. I have included the academic web pages of some key child language researchers, and these should be pretty reliable. In particular, many academics now post downloadable versions of research articles on their university homepages.

- Discussion points

Discussion points are sprinkled throughout the book wherever they seem like a Good Thing. They can be used in seminars or in student self-study groups (never tried the latter? – give them a go). For some of the Discussion points, you should equip yourself by reading the relevant chapter in advance and/or reading an item from the Further Reading section.

- Exercises on linguistic concepts (with answers)

Like cod liver oil, linguistic exercises are unpalatable, but very good for you. The idea is to limber up with some practice on unfamiliar concepts. Model answers are provided at the end of the book.

- Author index

Find your favourite authors, as mentioned in the text, and source their work in the list of references. Then challenge yourself to find other work, especially *recent* research, by the same authors (your university library will help if you're new to the sport of Reference Hunting).

- Subject index

Separate from the author index, because it makes life a little less cluttered. Relevant topics from each chapter are included to enhance the sum total of your learning happiness.

Contents

<i>Acknowledgements</i>	xiii
<i>Publisher's Acknowledgements</i>	xiv
<i>Notes on the Organization of this Book</i>	xvi
1 Prelude: Landmarks in the Landscape of Child Language	1
From burping to grammar in the pre-school years	2
Levels of language	4
Listen in mother	5
The cat in the hat in the womb	5
Some conclusions on sound	7
Word learning: From 0 to 14,000 in five years	7
Say 'mama'	7
Estimating vocabulary size	8
The <i>gavagai</i> problem	9
Morphology: Bits and pieces	10
Syntax: Putting it all together	13
Language in context: Perceptual, cognitive and social development	15
The study of child language	18
The lie of the land	21
2 Can Animals Acquire Human Language? Shakespeare's Typewriter	25
What is language?	26
The infinite monkey theorem	26
Language, talk and communication	27
The design of language	28
Teaching words to animals	34
The strong, silent types: Gua and Viki	34
Sign language	35
Lexigrams	36
Barking up the wrong tree: A talking dog	37
Alex, the non-parroting parrot	37
Animal grammar	38
Combining words	38
Comprehension of spoken English by Kanzi	40

The linguistic limitations of animals	41
Is speech special?	42
Categorical perception in infants and primates	42
Statistical learning	44
Back to grammar: Infants versus monkeys	45
The language faculty: Broad and narrow	46
3 The Critical Period Hypothesis: Now or Never?	51
What is a critical period?	52
A musical interlude	52
Lenneberg's critical period hypothesis	53
Designing research on critical periods	53
Cats' eyes: An example from animal development	53
How to identify a critical period	55
The effects of linguistic deprivation	56
The royal prerogative: Experiments on people	57
Feral children	57
Genie	58
Different critical periods for different aspects of language	60
A happier ending: The case of Isabelle	65
Conclusions from cases of deprivation	66
Age of acquisition effects in second language learning	66
Early versus late starters: Effects on language outcomes	67
Age effects may not be due to a critical period	69
Plastic fantastic: The receptive brain	72
Deafness and late language learning	73
Two more cases of linguistic deprivation: Chelsea and E.M.	73
Early versus late learning of American Sign Language	74
4 Input and Interaction: Tutorials for Toddlers	78
Talking to young children	79
Characteristics of Child Directed Speech	81
Phonology	81
Vocabulary	82
Morphology and syntax	82
A dynamic register	83
Individual differences and their effects	84
Child Directed Speech: Summary	86
Lack of interaction: Can children learn language from television?	87
Imitation	88
Linguistic creativity: Children make their own sentences	89
Skinner and Chomsky on imitation	89
Imitation as a mechanism in cognitive development	90
Imitation: Who, when and how?	91
Individual differences in imitation	93
Corrective input	94

Recasts: Adult repetition of the child	94
The 'no negative evidence' assumption	95
Contrastive discourse	96
Negative feedback	101
Corrective input: Summary	101
Universality of CDS	102
Input and interaction in language acquisition	104
5 Language in the First Year: Breaking the Sound Barrier	108
Hunt the phoneme	109
In the beginning	109
Drops of sound in a river of speech	109
Categorical perception	111
Specialization towards the native language	114
Why I don't speak Nthlakapmx	114
Loss or decline?	115
Enhancement of native contrasts	116
Individual differences in infant speech perception	118
Summary: Breaking the speech sound barrier	118
Word segmentation	119
The baby statistician	120
Learning from infant directed speech	124
Prosodic cues to speech segmentation	125
Relative cue strength	127
Grammar from the babble	128
Phonemes, words and grammar: Summary	130
6 The Developing Lexicon: What's in a Name?	133
Approaches to word learning	134
First words	135
Comprehension versus production	135
What do one-year-olds talk about?	135
Overextension	137
Categorically wrong	138
Lexical plugs: Pragmatic errors	139
Losing it: Retrieval failures	140
Lexical processing	140
Up, up and away: The vocabulary spurt	142
Why so fast?	142
Spurt? What spurt?	144
The rate of word learning	145
Ten words a day?	145
Fast mapping	146
Slow mapping: The gradual accretion of meaning	147
Biases	148
The return of the <i>gavagai</i> problem	148

A noun bias in the child and in research	148
Nouns are easy	149
Verbs are hard	150
The shape bias	151
The rise and fall of word learning biases	152
Associative learning: The origin of biases?	152
Where do biases go?	153
Some lexical gaps	155
Computational modelling based on probability theory	155
7 The Acquisition of Morphology: Linguistic Lego	159
Morphological processes	160
Inflection	161
Derivation	162
Compounding	163
The acquisition of inflection	164
Whole word learning	164
The past tense debate: Rules or connections?	165
A dual-route account: Words and Rules theory	166
The acquisition of words and rules	167
The blocking hypothesis	168
Words and Rules: The story so far	169
Connectionism and a single-route account	170
Problems with connectionist models	172
Crosslinguistic evidence	173
Summary: One route or two?	173
Compounding and derivation	174
Derivation: The influence of productivity	175
Early compounds	176
Relating the parts to the whole in compounds	177
Complex compounds: Three processes combined	178
Morphology in the school years	181
Morphological awareness	181
Connections with vocabulary, reading and spelling	182
Morphological awareness in teachers	183
8 Linguistic Nativism: To the Grammar Born	186
Universal Grammar	187
The problem of linguistic diversity	190
Core versus periphery	191
Parameters of variation	192
Setting parameters: Triggers	192
Arguments for linguistic nativism	193
Some initial observations	193
Limited exposure to linguistic input	194
No direct instruction	195

Ease and speed of language acquisition	196
The poverty of stimulus argument	197
Plato's problem	197
Degenerate input	198
Negative evidence: Corrective input for grammatical errors	198
Knowledge in the absence of experience: The case of structure dependence	199
The origins of structure dependence	202
The imitation of grammatical structures	203
Evidence from children	203
Poverty of the stimulus: Summary	206
The contents of UG: What precisely is innate?	207
Conclusion	208
9 The Usage-based Approach: Making it Up as You Go Along	211
Language knowledge from language use	212
Social cognition	213
Dyadic and triadic interaction	213
Collaborative engagement and intention-reading	214
Collaborative engagement as a basis for language development	215
Early constructions: A route into grammar	216
In the beginning was the utterance	216
From single-unit to multi-unit speech	218
Does the child go from fully concrete to fully abstract?	220
The productivity puzzle	221
The transitivity bias	221
Pattern finding	224
Type frequency: A route to productivity	225
Early productivity: Syntactic bootstrapping	227
Constraining productivity	230
Conservative learning	231
Entrenchment	231
Pre-emption	234
Summary: Reining back on productivity	235
10 You Say Nature, I Say Nurture: Better Call the Calling Off Off	239
Some basic facts	240
Dietrich Tiedemann (1787)	240
Child language: A timeline	241
The nature in nature-nurture: Something must be innate	242
Learning mechanisms	243
Domain-general learning: How general?	243
Linguistic nativism: The need for learning mechanisms	245
Nature and nurture in the study of child language	246

The genetic basis of language development	246
Integrating 'nurture' into theories of syntax acquisition	247
Methodology: Limitations and possibilities	248
Child language: Acquisition and development	252
Appendix 1 <i>Observations on language acquisition made by Dietrich Tiedemann (1787)</i>	256
Appendix 2 <i>Pronunciation guide: English phonemes</i>	259
<i>Glossary of linguistic terms</i>	260
<i>Answers to exercises</i>	272
<i>References</i>	278
<i>Author Index</i>	309
<i>Subject Index</i>	319

Prelude: Landmarks in the Landscape of Child Language

Contents

From burping to grammar in the pre-school years	2
Levels of language	4
Listen in mother	5
The cat in the hat in the womb	5
Some conclusions on sound	7
Word learning: From 0 to 14,000 in five years	7
Say 'mama'	7
Estimating vocabulary size	8
The <i>gavagai</i> problem	9
Morphology: Bits and pieces	10
Syntax: Putting it all together	13
Language in context: Perceptual, cognitive and social development	15
The study of child language	18
The lie of the land	21

Overview

By the end of this chapter you should have some appreciation of the challenges facing the newborn infant in the acquisition of language. Major landmarks in language development are presented at each of the following four levels of linguistic analysis:

- phonology (the sound system)
- vocabulary
- morphology (parts of words, especially those parts used for grammar)
- syntax

We will consider some of the philosophical problems facing the child (for example, how does the child know what a word is, or what it might refer to?). And we will introduce the nature–nurture problem. To set the child's language learning achievements in context, an overview is provided of the child's achievements in other developmental domains (cognitive, perceptual–motor and social), before sketching out the contents of the chapters that follow.

From burping to grammar in the pre-school years

Have you ever had a chat with a toddler? A rather precocious two-year-old, known as Eve, came out with the following one day, while in conversation with her mother:

(1) Eve aged two years (Brown, 1973):

*he go asleep
want more grape juice
putting sand in the pail
I have got my crayons
where other baby?*

We can see straight away that Eve is fairly savvy about a number of different topics. But however impressed we are by Eve's knowledge of crayons, sand and juice, it is clear that not one of the sentences would pass muster if they were uttered by an adult in the same setting. If nothing else, this reminds us that language *develops*.

As we shall discover in this book, though, Eve has already come a long way by the age of two years. A typical newborn is capable, vocally, of no more than reflexive crying and fussing, plus a small repertoire of vegetative sounds, principally, burping, spitting up and swallowing (Stark, 1986). This repertoire is lent some charm at about eight weeks, with the emergence of cooing and laughter. But if we fast forward to the typical five-year-old, then we suddenly find ourselves in the company of a linguistic sophisticate, someone with an extensive vocabulary who is able to put words together in interesting, complex sentences that, for the most part, are perfectly well formed.

(2) Ross aged 5;1 (MacWhinney, 2000):

I had the worst dream of my life

I wish I could let you in here, but there's no room

You thought he couldn't go to school because we didn't have the medicine

Box 1.1

Notation for the Child's Age

There is a standard convention for denoting a child's age in the child language literature. A child aged two years, three months would be recorded as 2;3. The child of four years, six months appears as 4;6, and so on. Note the use of the semi-colon to separate years from months. When even more fine-grained analyses are required, we can also add the number of days after a period (.): 1;9.10 is read as one year, nine months and ten days.

This shorthand, in which we note months as well as years, is very useful. Things can move fast in child language and important distinctions might otherwise be lost. For example, take two children, both aged one year. The first child, aged 1;0, might not yet have produced her first word, whereas the second child, aged 1;10, might already be stringing multi-word utterances together.

Eve aged 1;10 (Brown, 1973):

Sue make some

oh my Graham cracker broke

here Fraser briefcase

have to drink grape juice first

The acquisition of language is a staggering feat. It is all too easy to overlook the monumental nature of this achievement, because language learning seems to come so easily to all typically developing children. Perhaps we take the miracle of language learning for granted because, as adults, we typically take the *possession* of language itself for granted. Every cognisant reader of this book has an extensive, complex, rich knowledge of language. But this knowledge is such universal currency – so very much part of everyday life – that we often fail to notice or appreciate the great gift it affords the human species. Exercise 1.1 (below) throws a spotlight on the position of language in human society.

Exercise 1.1

Imagine a world *without* language. Consider the world we live in and consider the ways in which we depend on language. In some ways, this is an incredibly easy task. In others, it

(Cont'd)