Methods for Assessing Children's Syntax

edited by Dana McDaniel, Cecile McKee, and Helen Smith Cairns

Methods for Assessing Children's Syntax

edited by
Dana McDaniel,
Cecile McKee, and
Helen Smith Cairns

The MIT Press
Cambridge, Massachusett
London, England

This book was set in Times Roman by Asco Trade Typesetting Ltd., Hong Kong.

Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Methods for assessing children's syntax / edited by Dana McDaniel, Cecile McKee and Helen Smith Cairns.
p. cm. — (Language, speech, and communication)
Includes bibliographical references and index.
ISBN 0-262-13325-3 (hc : alk. paper)
1. Language acquisition—Research—Methodology. 2. Grammar, Comparative and general—Syntax—Research—Methodology.
I. McDaniel, Dana. II. McKee, Cecile. III. Cairns, Helen Smith.
IV. Series.
P118.15.M48 1996
401'.93—dc20 96-33915
CIP

Contributors

Helen Smith Cairns
Department of Communication
Arts and Sciences
Queens College—G100
Flushing, NY 11367
cairns@qcvaxa.acc.qc.edu

Katherine Demuth
Department of Cognitive and
Linguistic Sciences
Brown University
Box 1978
Providence, RI 02912
katherine_
demuth@postoffice.brown.edu

Jill de Villiers
Psychology Department
Smith College
Northampton, MA 01063
jdevil@smith.smith.edu

Suzanne Flynn
Department of Foreign Languages
and Literature
Massachusetts Institute of
Technology
77 Massachusetts Avenue
Cambridge, MA 02139
sflynn@mit.edu

Claire Foley
Department of Modern Languages
and Linguistics
Cornell University
Morrill Hall
Ithaca, NY 14853
cf14@cornell.edu

LouAnn Gerken
Department of Speech and
Hearing Sciences
Building #71
University of Arizona
Tucson, AZ 85721
gerken@ccit.arizona.edu

Roberta Michnick Golinkoff
Department of Educational Studies
University of Delaware
46 East Delaware Avenue
Newark, DE 19716
roberta@strauss.udel.edu

Helen Goodluck
Department of Linguistics
University of Ottawa
PO Box 450 Stn A
Ottawa, Ontario
Canada K1N 6N5
hgoodlu@aix1.uottawa.ca

Peter Gordon
Department of Psychology
University of Pittsburgh
Pittsburgh, PA 15260
peter@vms.cis.pitt.edu

Kathy Hirsh-Pasek
Department of Psychology
Temple University, 022-29
Philadelphia, PA 19122
v5080e@vm.temple.edu

Jennifer Ryan Hsu
Department of Communication Disorders
The William Paterson College
300 Pompton Road
Wayne, NJ 07470

Louis Michael Hsu
Department of Psychology
Fairleigh Dickinson University
1000 River Road
Teaneck, NJ 07666

Celia Jakubowicz
Université René Descartes
UFR Institut de Psychologie
Laboratoire de Psychologie Expérimentale
CNRS URA 316
28, rue Serpente
75006 Paris, France
jakubowi@idf.ext.jussieu.fr

Laurence B. Leonard
Department of Audiology and Speech Sciences
Purdue University
Heavilon Hall
West Lafayette, IN 47907
xdxl@vm.cc.purdue.edu

Barbara Lust
Department of Modern Languages and Linguistics
Cornell University
Morrill Hall
Ithaca, NY 14853
bcl4@cornell.edu

Dana McDaniel
Linguistics
University of Southern Maine
96 Falmouth Street
P.O. Box 9300
Portland, ME 04104-9300
rxa364@usm.maine.edu

Cecile McKee
Department of Linguistics
Douglass 200E
University of Arizona
Tucson, AZ 85721
mckee@u.arizona.edu

Thomas Roeper
Department of Linguistics
226 South College
University of Massachusetts, Amherst
Amherst, MA 01003
roeper@cs.umass.edu

Michele E. Shady
Department of Psychology
SUNY Buffalo
Park Hall
Buffalo, NY 14260

Karin Stromswold
Department of Psychology and Center for Cognitive Science
Rutgers University
New Brunswick, NJ 08903
karin@ruccs.rutgers.edu

Rosalind Thornton
Department of Linguistics
1401F Marie Mount Hall
University of Maryland
College Park, MD 20742
rt58@umail.umd.edu

Preface

People have studied child language at least since Darwin (1877) reported on his son's early speech. However, in recent years both the scope of the field and the methods used for studying child language have greatly expanded. This is largely due to Noam Chomsky's influence on the study of syntax, where emphasis on hidden competence has taken researchers far beyond the behaviorists' focus on observable phenomena. Changes in the field have entailed changes in methodology:

> It seems clear that the description which is of the greatest psychological relevance is the account of competence, not that of performance, both in the case of arithmetic and the case of language.... Obviously one can find out about competence only by studying performance, but this study must be carried out in devious and clever ways, if any serious result is to be obtained. (Chomsky 1964, 36)

Since Chomsky made this statement, advances in methods for studying competence have led to a more sophisticated conception of the competence/performance distinction itself. When the distinction was first made, competence was seen as a fascinating, hidden, static system, whereas performance was considered an uninteresting overlay of squalor that one had to slog through to discover the underlying competence. It is now recognized that competence is in many ways dynamic and that many performance phenomena, such as referential preferences, are not only interesting but also—although not part of the grammar—clearly linguistic. The sophisticated methods that led to a better understanding of the notions of competence and performance are also able to address new questions that arise as a result of reconceptualization of these notions.

Methodology has therefore played an important role in the development of the field. Although methodology is not an end in itself, methods affect results, which in turn drive conclusions. Methodological differences can often account for seemingly divergent results across studies. In such

cases, one must interpret the results in light of the methodological differences. Conversely, to the extent that results converge across a variety of methods, they support conclusions in which one can have a high degree of confidence.

This brings us to the purpose of this book. Though methodology plays an important role in hypothesis testing and though methods have become quite sophisticated and complex, methodological issues are underaddressed in journals. The reason for this is, of course, that journal articles must devote most of their space to the findings and conclusions of specific studies. The relatively small amount of space devoted to methods is not sufficient to convey much to readers about a specific task used in a study or to address general methodological issues. This book takes a step toward filling that void.

In editing the book, we had two general purposes in mind. The first is to help students or researchers who are designing a study to choose a method or to use a method with which they have no experience. For such people, this book can function as a how-to handbook. A method (or combination of methods) can be chosen based on what is measured and who the subjects are. For example, a comprehension task is generally more appropriate than a production task if the goal is to learn about interpretations of sentences; an off-line task is not appropriate for studying midsentence garden paths; and for very young subjects, preferential looking is more effective than most other comprehension tasks. The book should also be helpful in determining the procedures involved in designing and conducting a study, once a task has been selected.

The second general purpose of the book is to aid in the evaluation of research. For example, as noted above, divergent findings are often attributed to methodology. In order to form hypotheses about how differences in methods are responsible for different findings, one must examine the relevant methods in detail. One might ask, for example, what the methods have been used to assess in the past, what the pitfalls of the methods are, and how their results are generally analyzed. This book should provide the information needed to carry out such a comparison.

The work in child syntax represented in this book combines the best features of two approaches to the study of human cognition: the computational-representational approach developed by linguists and the experimental approach developed by experimental psychologists.

A central tenet of experimental psychology is that a phenomenon must occur more often than would be anticipated by chance before it can be

considered psychologically "real." Sophisticated quantitative tools are designed to distinguish such genuine phenomena from ambient variability ("noise"). Individual differences are typically considered part of the "noise," and psychological theories, in the main, account for phenomena characteristic of groups of children. Experiments are designed to ensure that the psychological effects they identify are stable and replicable. Data collection must therefore be completely objective, and experimental manipulations must be free of confounding effects.

The philosophy guiding the field of linguistics is quite different. In that field, a phenomenon is considered genuine if it is theoretically interesting and coherent, and often a phenomenon is evaluated by how well it can be accounted for within a particular theory. Under this approach, individual differences signal important differences in grammar, which the theory is responsible for. Linguistics is thus empirical, but not experimental in the sense of experimental psychology. Although data are adduced to test hypotheses, no real attention is given to the methods of data collection.

The field of child language acquisition has combined these two approaches to create methods that in our view are more effective than they would be if they were based exclusively on the philosophy of a single field. Linguistics has contributed rich theoretical questions and attention to the individual. The latter is important because children cannot be assumed to be linguistically homogeneous; individual differences in children's responses must therefore be identified and addressed. Experimental psychology has provided standards for design and analysis that allow one to trust and defend one's data and compare findings across children, age groups, laboratories, languages, and so on, availing oneself of all the power of statistical analysis. Unfortunately, in order to get the best results with children, it is often necessary to modify procedures to create an experimental ambience that maximizes the quality of each subject's data. From a theoretical perspective, the alliance between experimental psychology and linguistics grounds the study of language within the study of human cognition. An overarching cognitive science perspective provides a context for and thus enriches theories of the human language faculty.

The three of us have different academic backgrounds, and we have all experienced firsthand the consequences of this synergy between the fields of experimental psychology and theoretical linguistics. As we have collaborated on this book, we have discovered that in our work with children each of us has a sense of compromising precepts drawn from our basic academic training. On the one hand, we have experienced the tensions of

tempering rigorous experimental strictures with the reality of working with individuals. On the other, we have recognized the necessity for more elaborate methods of data collection than those typically employed by theoretical linguists. We recognize that modifying the standard methods of the two fields allows us to do work in the hybrid field of child language that otherwise would not be possible. The methods discussed in this book reflect the influence of both linguistics and experimental psychology. Some are closer to language acquisition's roots in one field or the other, but they all include some aspects of both.

The scope of this book is limited to methods for assessing syntax. However, many of the methods discussed could be, and have been, used to study morphology and the lexicon as well. Furthermore, though many of the contributors work within the Principles and Parameters framework and therefore cite examples of studies conducted within this framework, the methods described would be equally useful for researchers with other theoretical orientations.

The book is organized as follows. Parts I–III contain chapters on specific methods, divided according to the type of data that are collected: production, comprehension, and judgment data, respectively. The chapters in part IV discuss general methodological considerations that arise regardless of which method is used.

Each chapter in parts I–III pertains to one method, characterized by the subject's task. Within each part, the methods are roughly ordered according to the perceived degree of complexity of the task for the subject, starting with the least complex. Each chapter includes some discussion of the history of the method, the types of issues it can address, its advantages and disadvantages, and how-to instructions on its use.

The contributors to this book have extensive experience with the methods they describe, and they base their discussions largely on their own experience. The reader should not assume, however, that the procedures are limited to the uses to which they have been put in the past. All of the methods described can be modified, and probably are being modified, in many ways. As the authors point out, some degree of modification is almost always necessary to meet the requirements of each specific study, depending on the issues that the research project is designed to address. Many studies also use more than one method or combine several methods into one. Furthermore, clear lines cannot always be drawn between the methods described in this book. Take, for example, the truth-value judgment task (chapter 10, this volume), in which subjects are pre-

sented with a scenario and a sentence about the scenario and are asked to judge whether the sentence is true within that context. The sentence can be declarative, in which case the subject makes a true/false judgment, or it can be a yes/no question that the subject answers. The declarative variant is quite similar to a grammaticality judgment task concerning judgments of reference, in which subjects have to judge whether a certain sentence can be used to describe a particular scenario (chapter 11, this volume). The question variant is almost identical to the questions-after-stories task (chapter 8, this volume). The only difference is that the former task uses yes/no questions and the latter uses *wh*-questions; in both cases the researcher concludes something about the subjects' structural analyses of the questions based on their answers.

The chapters in part I discuss methods that employ subjects' language production as data. Though this type of method is the oldest used in studying child language, recent developments have enhanced it in numerous ways. Demuth discusses the care with which spontaneous speech data are now collected and the issues that arise in cross-cultural production work. In her chapter on analyzing spontaneous utterances, Stromswold demonstrates how this type of data, which was classically associated with individual subjects, can be analyzed like group data from an experiment. In their chapter on elicited imitation, Lust, Flynn, and Foley demonstrate how a well-established technique can be used to address complex syntactic issues, and in her chapter on other elicited production techniques, Thornton shows how, in spite of subjects' syntactic creativity, it is possible to put them in a situation that induces them to use a specific syntactic construct.

Comprehension tasks, discussed in part II, allow researchers to study children's language apart from their language production, and they exchange greater freedom on the part of the subject for more control on the part of the experimenter. The materials in a comprehension task can be designed in such a way as to test subjects' interpretations of minimal permutations on a construction. The intermodal preferential looking paradigm, described by Hirsh-Pasek and Golinkoff, can be used with young subjects who are not yet saying anything at all. Another nonverbal task, appropriate for slightly older subjects, is the picture selection task, described by Gerken and Shady. They also demonstrate that the picture selection task is not limited to determining interpretations, but, when accuracy scores are evaluated, can also indicate sensitivity to grammaticality. Goodluck argues that the act-out task can determine

which interpretations are possible, in addition to which are preferable. De Villiers and Roeper demonstrate that the questions-after-stories task can be used to assess subjects' knowledge of complex constraints on *wh*-constructions. McKee discusses on-line tasks, which have only recently been modified for child subjects and which arguably offer the only way to explore children's sentence processing as it occurs in real time.

Judgment tasks, discussed in part III, most closely resemble the methods used by syntacticians studying adult language and in fact were not modified for use with children until relatively recently. Gordon emphasizes two variations on the truth-value judgment task, both of which can be used with very young subjects. McDaniel and Cairns discuss the grammaticality judgment task, which allows the researcher to ask subjects directly about ungrammatical sentences and which can be used to study the full range of possible referents for pronominal elements.

The chapters in part IV include general considerations that span the various methods. Until recently most work in child syntax focused on English. Recent crosslinguistic investigations, as discussed by Jakubowicz, are particularly informed by the theory of Universal Grammar. Jakubowicz discusses the methodological considerations that enter into designing a crosslinguistic study. In his chapter on research in clinical settings, Leonard argues that investigations of disordered language can and should be expanded to include researcher-designed instruments like those discussed in this book. Finally, Hsu and Hsu focus on issues of experimental design and quantitative analysis that are especially relevant to the study of child language.

This book is a joint effort involving a number of people. We are grateful to Amy Pierce at MIT Press for the guidance she gave us at every stage. We thank two anonymous reviewers for helpful comments on our initial proposal. We consider ourselves extremely fortunate to have had Anne Mark as our copyeditor and Kelley McDaniel as our indexer. We are also grateful to Sandra Minkkinen, the production editor, for her help in the final stages. We are, of course, indebted to our contributors who have been a joy to work with. Finally, we thank all the many nonacademic people whose cooperation is essential for work in child language to go forward: children who serve as subjects, and teachers and administrators who invite linguists into their schools.

Contents

PART I

Production Data

Chapter 1

Collecting Spontaneous Production Data

Katherine Demuth

1.1 Introduction

Much of the earliest work on child language acquisition took the form of longitudinal diary studies, where parents documented developments in their child's grammar and/or lexicon (e.g., Stern and Stern 1907; Grégoire 1937, 1947). Later, with the emergence of tape-recording technology, both parents and nonparent researchers were able to collect spontaneous speech samples from a variety of children. This paved the way for a significant increase in both the amount of material that could be collected and the types of research issues that could be addressed. Many of these issues, such as the path to development of grammatical competence, the contributions of general cognitive abilities, and the role of input, continue to be hotly debated today, not only by linguists and researchers working on language acquisition, but also by learning theorists and cognitive scientists more generally.

Along with a growing interest in the nature of linguistic structure (Chomsky 1957, 1965) came an increasing concern with how these structures are actually acquired. Some of the earliest research on the acquisition of English used spontaneous production data to begin to address this question (e.g., Braine 1963; Brown and Fraser 1963; Miller and Ervin 1964; Bloom 1970). It was also recognized that crosslinguistic data are essential for understanding the nature of language acquisition. This led Slobin and colleagues to the development of *A Field Manual for Cross-Cultural Study of the Acquisition of Communicative Competence* (Slobin 1967). Several studies of children learning other languages followed (Finnish, Bowerman 1973; Samoan, Kernan 1969; and Japanese, McNeill 1966a, McNeill and McNeill 1966). Since that time, the collection of spontaneous production data has become a frequently used method for