Asymmetries between Language Production and Comprehension
Asymmetries between Language Production and Comprehension
STUDIES IN THEORETICAL PSYCHOLINGUISTICS

VOLUME 42

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Preface

The idea behind this book arose when I was working with Jennifer Spenader on a theoretical account of children’s errors with pronouns. Much to my surprise, our account predicted that errors in comprehension would not be accompanied by errors in production. We were not quite ready to accept this unexpected asymmetry between comprehension and production in child language, so we set out to test this prediction in an acquisition experiment. Indeed, the same 4- and 5-year-old children who seemed ignorant of the conditions on the use of pronouns in the comprehension task, without any hesitation used pronouns correctly in the production task. This intriguing observation formed the starting point for this book. In particular, it made me wonder whether this asymmetry was an exceptional pattern that is only found with pronouns and perhaps a few other linguistic expressions, or whether this asymmetry reflected a fundamental property of language. When I started to pay attention to this pattern of production before comprehension, I came across more and more references in the child language literature to asymmetries between production and comprehension. The tension between the apparent ubiquity of these asymmetries and the challenge they pose to most linguistic theories has inspired my research over the past years.

This book is the outcome of the Vici project Asymmetries in Grammar, which was carried out at the University of Groningen between 2007 and 2013 with financial support of the Netherlands Organisation for Scientific Research (NWO grant no. 277-70-005). The project investigated the relation between the production and comprehension of linguistic expressions in various groups of speakers. This book presents the results of the project and discusses the implications of these results for linguistic theory. It could not have been written without the input of the PhD students, postdoctoral researchers and associated faculty who participated in the project: Gisi
Cannizzaro, Catharina Hartman, John Hoeks, Bart Hollebrandse, Angeliek van Hout, Charlotte Koster, Sanne Kuijper, Jessica Overweg, Jacolien van Rij, Hedderik van Rijn and Margreet Vogelzang. They critically read previous versions of the book, suggested important improvements and were happy to discuss the ideas presented in the book. Coming from diverse backgrounds, ranging from linguistics to psychology to artificial intelligence, they created an inspiring interdisciplinary atmosphere that encouraged the exploration of novel ideas and the use of innovative research methods such as remote eye-tracking and cognitive modeling. Many of the empirical and computational results presented in this book are based upon their work.

Special thanks go to Joan Bresnan, who made possible my stay at Stanford University during the academic year 2009–2010 and was very generous with her time, ideas and office space during that period and at later visits. It was during this year at Stanford that the book started to take shape. Thanks also to Tracy Holloway King, Marleen Zwiers and their families for helping us settle and feel at home in the Bay Area. Furthermore, I thank the faculty and students of the departments of linguistics and psychology at Stanford University, in particular Arto Anttila, Lucas Champollion, Eve Clark, Herb Clark, Cleo Condoravdi, Penny Eckert, Anne Fernald, Jason Grafmiller, Scott Grimm, Theres Grüter, Tania Henetz, Lauri Karttunen, Victor Kuperman, Chigusa Kurumada, Sven Lauer, Beth Levin, Marie-Catharine de Marneffe, Robin Melnick, Chris Potts, Ivan Sag, Stephanie Shih, Nola Stephens, Middy Tice, Tom Wasow, and Annie Zaenen. I am grateful for the various opportunities I was given to present earlier versions of the work discussed in the book at the linguistics department and the psychology department, and for the useful feedback I received during these presentations. Besides the climate (Cleo was right, living in California for even a short period of time probably spoiled me for the rest of my life), I also enjoyed the lively and inspiring atmosphere at Stanford and all formal and informal discussions about linguistics and other important topics.

The work presented in this book builds upon previous work in Optimality Theoretic semantics. I am deeply indebted to Helen de Hoop and Henriëtte de Swart for their input already in the earliest stages of this project when I was writing the project proposal. Their encouragement and advice helped me to improve my plans and sharpen my ideas. In addition, I would like to thank my collaborators on related projects for numerous inspiring discussions and for sharing their expertise: Deniz Başkent, Reinhard Blutner, Gerlof Bouma, Dicky Gilbers, Charlotte Gooskens, Helen de Hoop, Franziska Köder, Irene Krämer, Monique Lamers, Emar Maier, Erik-Jan Smits, Henriëtte de Swart, Peter de Swart, Jennifer Spenader,
Rineke Verbrugge and Joost Zwarts. Also thanks to the members of the Acquisition Lab and the Experimental Linguistics group at the University of Groningen, in particular Angeliek van Hout, Ken Drozd, Susanne Grassmann, John Hoeks, Ruggero Montalto, Laurie Stowe and Ryan Taylor, for pleasant discussions about theoretical assumptions, experimental designs and statistical analyses. This book benefited greatly from conversations and discussions with Diana Apoussidou, Jennifer Arnold, Anton Benz, Geertje van Bergen, Paul Boersma, Natalie Boll-Avetisyan, Holly Brangan, Hannah De Mulder, Jill de Villiers, Michael Franke, Maria Teresa Guasti, Cornelia Hamann, Jack Hoeksema, Lotte Hogeweg, Florian Jaeger, Géraldine Legendre, Sander Lestrade, Alice ter Meulen, Colin Phillips, Esther Ruigendijk, Irina Sekerina, Paul Smolensky, Niels Taatgen, Helen Tager-Flusberg, Roberta Tedeschi, John Trueswell, Henk Zeevat and the audiences of various workshops and conferences. I am thankful to two anonymous reviewers for Springer for carefully reading an earlier version of the book and suggesting several improvements.

Of course, the findings discussed in this book could not have been obtained without the help of the students in linguistics, psychology and artificial intelligence at the University of Groningen who assisted in carrying out experiments, transcribing and coding data and analyzing results: Saskia van den Akker, Arina Banga, Elise Bennik, Sanne Berends, Sanne M. Berends, Laura Bonder, Myrthe Faber, Fleur Grashof, Frederike Groothoff, Sabine van der Ham, Merel Heerink, Laura Hemstra, Tineke Jansen, Ingeborg Heutinck, Ruth Koops van ’t Jagt, Daniël Karavolos, Annemiek Korf, Sanne Masselman, Zheng Yen Ng, Sandrien van Ommen, Jessica Overweg, Tineke Prins, Trijanne Rietveld, Thea de Ruiter, Atty Schouwenaars, Nienke Spanjer, Susanne Spijkerman, Maaike Veeninga, Alma Veenstra, Jet Vonk, Fransje van Weerden, Edgar Weiffenbach, Ellis Wieringa, Laura Wismans, Kirsten Woltius, Ellis Wubs, Roline Wijs, Marie-Anne Zuidhof, the students in the MA course Semantics and Language Acquisition, and students from the Hanzehogeschool Groningen Valerie Dubois, Machteld Kort and Cynthia Werkman and their supervisor Margreet Luinge. The illustrations and animated movies used in the various experiments were created by Robbert Prins, Petra van Berkum, Kim and Matthijs of MAKI ontwerp en illustratie, Rik Schlimbach and Liske van der Vliet, who did a marvellous job.

Also in my personal life, several people were crucial to the successful completion of this book. My soccer teammates from Lycurgus made me realize that there are other important goals in life than finishing a book. My parents Hendrik and Dina, parents-in-law Roel and Clara and eldest son Jesse contributed in various ways to the writing of this book. Thanks also to
the rest of my family and friends, who patiently listened to me when I tried to explain the ideas presented in this book and who occasionally volunteered as a participant in one of the studies. But my final and biggest thanks go to my wife Mieny and youngest son Wouter. They came to accept the fact that I spent most Sundays, evenings and holidays during the past year writing and even agreed to move to California for an entire year. Luckily for me, they enjoyed that year at least as much as I did. Mieny is of course thanked for so much more, and I can’t imagine how my life would have been without her. I hope the sacrifices Mieny and Wouter made for this book are compensated by the happy memories of the times we took highway 92 through the hills and waved at the giant rusty dinosaurs on our way to Half Moon Bay.

Groningen, The Netherlands
Schiermonnikoog, October 2012

Petra Hendriks
# Contents

1  **Understanding and Misunderstanding** ........................... 1
   1.1  The Eliza Effect ............................................... 1
   1.2  Language as a Code .......................................... 5
   1.3  Language as a Signal ......................................... 10
   1.4  Speaking Versus Understanding ............................. 14
   1.5  Prioritizing .................................................... 19
   1.6  Perspective Taking ............................................ 25
   1.7  Overview of the Book ........................................ 27
   References ............................................................ 28

2  **Asymmetries in Language Acquisition** ........................... 33
   2.1  When Production Precedes Comprehension ................. 33
   2.2  Asymmetry with Word Order ................................ 36
   2.3  Explaining the Word Order Asymmetry ..................... 38
   2.4  Further Evidence for the Word Order Asymmetry .......... 44
   2.5  Acquiring Symmetry Through Prioritizing .................. 47
   2.6  Inflection as a Cue in Production But Not 
in Comprehension .................................................... 51
   2.7  Pronouns in Competition ..................................... 56
   2.8  Non-adult Interpretations of Scrambled Word Order ...... 63
   2.9  Acquiring Symmetry Through Perspective Taking .......... 66
   2.10  Children’s Difficulty with Marked Forms ............... 69
   2.11  Asymmetries Everywhere? ................................... 72
   References ............................................................ 73

3  **The Listener’s Perspective** ......................................... 79
   3.1  Children’s Misinterpretation of Pronouns ............... 79
   3.2  The Delay of Principle B Effect ............................ 81
   3.3  Pragmatic Explanations of the DPBE ..................... 83
Contents

6 Competing Perspectives ............................................. 181
  6.1 Asymmetries Between Production and Comprehension ... 181
  6.2 Asymmetries Show Linguistic Systematicity .......... 183
  6.3 Asymmetries Occur at All Levels of the Grammar .... 185
  6.4 Asymmetries Disappear with Linguistic Development .. 186
  6.5 Final Considerations ......................................... 189
References .......................................................... 194

7 Appendix ............................................................. 197
  7.1 Optimality Theory ............................................ 197
  7.2 OT Analyses for Chap. 1 ................................. 199
  7.3 OT Analyses for Chap. 2 ................................. 201
  7.4 OT Analyses for Chap. 3 ................................. 204
  7.5 OT Analyses for Chap. 4 ................................. 214
  7.6 OT Analyses for Chap. 5 ................................. 218
References .......................................................... 226

Index ................................................................. 229
Chapter 1
Understanding and Misunderstanding

Abstract According to the classical view on language, language is a code and speakers encode meanings and listeners decode meanings using the same rules of grammar. This view is contrasted with an alternative view of language as a signaling system. This alternative language-as-signal view posits a distinction between the perspective of the speaker and the perspective of the listener, which aligns well with observed differences between language production and comprehension. A linguistic framework that formalizes the distinction between the speaker’s perspective and the listener’s perspective is Optimality Theory. It is shown how this constraint-based framework can account for mismatches between production and comprehension.

Keywords Competence • Comprehension • ELIZA • Eliza effect • Grammar • Optimality Theory • Performance • Perspective • Perspective taking • Production

1.1 The Eliza Effect

How long would it take you to discover that the person you are having a conversation with does not understand a word of what you are saying? Most people will probably guess that it would only take them a few seconds. However, in his hilarious academic satire Small World, David Lodge describes how one of the characters in his novel has long conversations

1All figures in this chapter are provided by the author.
with a computer program called ELIZA. This character, professor in English language and literature Robin Dempsey, even becomes emotionally caught up in his conversations with ELIZA, as the following excerpt from Lodge (1984:154–155) illustrates.

“HALLO,” Robin typed on the keyboard.
“HALLO, HOW ARE YOU FEELING?” replied ELIZA, the printed words appearing instantly on the VDU.
“I’M FEELING TERRIBLE,” Robin replied.
“WHAT DO YOU MEAN BY THAT PRECISELY?”
“I’M FEELING DEPRESSED.”
“WHY DO YOU THINK YOU ARE DEPRESSED?”
“BECAUSE I’M LONELY.”
“DO YOU LIVE WITH YOUR FAMILY?”
“NO.”
“DO YOU HAVE ANY FRIENDS?”
“NOT REALLY.”
“WHY IS THAT?”
Robin Dempsey paused for some considerable time before he typed in his reply: “I DON’T KNOW.”
“DO YOU REALLY NOT KNOW OR ARE YOU JUST AVOIDING THE QUESTION?”
Robin Dempsey flushed and typed rapidly: “I USED TO HAVE FRIENDS ONCE.”
“WHEN WAS THAT?”
“BEFORE I WAS MARRIED.”
“You DIDN’T TELL ME YOU WERE MARRIED.”
“I’M DIVORCED.”
“TELL ME ABOUT YOUR DIVORCE.”
Robin Dempsey typed rapidly for fifteen minutes without stopping…

ELIZA is not a fictional creation but an actual computer program developed by Joseph Weizenbaum in the 1960s (Weizenbaum 1966). The computer program was named after Eliza Doolittle, a poor Cockney girl in George Bernard Shaw’s play Pygmalion. In this play, Eliza Doolittle was taught by Henry Higgins, a professor in phonetics, to refine her speech and manners so that she could pass for a duchess. Simulating a Rogerian psychotherapist, the computer program ELIZA might pass for a human.

ELIZA works by simple transformations of the input text triggered by key words. For example, it replaces I in the input text with you in the answer and vice versa, and uses stock phrases such as why do you think and tell me about. Obviously, the computer program does not have any understanding at all of the sentences people type in. Nevertheless, it can give the illusion of understanding, if only briefly.

Not only fictional characters such as Professor Robin Dempsey in David Lodge’s novel suffer from this illusion (which is strengthened by the fact