

Palgrave Studies in Pragmatics, Language
and Cognition

Series Editors

Richard Breheny
Psychology and Language Sciences
University College London, London, UK

Uli Sauerland
Zentrum für Allgemeine Sprachwissenschaft (ZAS)
Berlin, Germany

Series editorial board

Kent Bach
Anne Bezuidenhout
Noel Burton-Roberts
Robyn Carston
François Recanati
Deirdre Wilson
Sam Glucksberg
Francesca Happé

Palgrave Studies in Pragmatics, Language and Cognition is a series of high quality research monographs and edited collections of essays focusing on the human pragmatic capacity and its interaction with natural language semantics and other faculties of mind. A central interest is the interface of pragmatics with the linguistic system(s), with the 'theory of mind' capacity and with other mental reasoning and general problem-solving capacities. Work of a social or cultural anthropological kind is included if firmly embedded in a cognitive framework. Given the interdisciplinarity of the focal issues, relevant research comes from linguistics, philosophy of language, theoretical and experimental pragmatics, psychology and child development. The series aims to reflect all kinds of research in the relevant fields - conceptual, analytical and experimental.

More information about this series at
<http://www.springer.com/series/14597>

Nicole Gotzner

Alternative Sets in Language Processing

How Focus Alternatives are Represented
in the Mind

palgrave
macmillan

Nicole Gotzner
Humboldt University
Berlin, Germany

Palgrave Studies in Pragmatics, Language and Cognition
ISBN 978-3-319-52760-4 ISBN 978-3-319-52761-1 (eBook)
DOI 10.1007/978-3-319-52761-1

Library of Congress Control Number: 2017930678

© The Editor(s) (if applicable) and The Author(s) 2017

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Cover illustration: © Andrew Taylor/Flickr

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

To my family: My parents and Nano.

Acknowledgments

I would like to thank first and foremost Katharina Spalek who guided me throughout my doctoral research phase and strongly supported my personal development. I am also grateful to my second advisor, Manfred Krifka, for his support both during my PhD phase and afterwards.

Numerous other people contributed useful advice on the research presented in this book, including Hubert Truckenbrodt, Andreas Haida, Isabell Wartenburger, Tue Trinh, Daniel Hole, Malte Zimmermann, Sophie Repp, Berry Claus, Hannah Bohle, Anna Czypionka, Jesse Harris, Jacopo Romoli, Daniele Panizza, Matt Husband, Mary Byram-Washburn, Christina Kim, Judith Degen, Filippo Domaneschi, Jack Tomlinson, Uli Sauerland, Judith Tonhauser, and Anton Benz. I would like to highlight two people who accompanied this whole journey, Duane Watson and Brian Leahy.

I am truly indebted to Stephanie Solt, my first Jedi Master, who practically raised me and continues to inspire me. I thank her for invaluable support during the early steps of my research career as well as continuing support. She is the reason I am able to try bridging the gap between formal linguistic theory and psycholinguistic research.

I would also like to express my gratitude to the language acquisition group at the Centre for Cognition and its Disorders at Macquarie University, with very warm and special thanks to Stephen Crain for his invaluable advice on so many levels. He has influenced my thinking more

than any other scientist I have ever met and will be my role model for the rest of my career.

On a personal level, I would like to thank two very special people, Madeleine and Jenny. Finally, the greatest support came from my family: my parents and Nano, the love of my life. I am indebted to Nano for his patience in giving millions of judgments on notorious sentences like *Anna only ate a banana* and for at least trying to prevent me from hearing the word *only* in every possible sentence. He, my parents, and the Berlin family are most certainly the reasons why I haven't progressed too far along the academic Asperger's syndrome scale while writing this book.

Contents

1	Introduction	1
2	Theoretical and Empirical Background	11
3	Long-Term Representation of the Entire Alternative Set	41
4	The Mechanisms of Activation and Competitive Inhibition	71
5	What's Included in the Set of Alternatives?	103
6	Contrastive Pitch Accents and Focus Particles	123
7	Conclusions	139
	Index	161

List of Figures

Fig. 1.1	Dancing is ALSO a sport (http://wupwup.com/artists/)	2
Fig. 3.1	Mean pitch contour of the focused element in Experiment 1a	47
Fig. 3.2	Trial sequence: delayed recall	51
Fig. 3.3	Mean percentage of recalled alternatives (<i>left</i>) and focused element (<i>right</i>) (Exp. 1a)	52
Fig. 3.4	Mean pitch contour of the focused element in Experiment 1b	59
Fig. 3.5	Mean percentage of recalled alternatives (<i>left</i>) and focused element (<i>right</i>) (Exp. 1b)	61
Fig. 4.1	Trial sequence: Probe recognition	79
Fig. 4.2	Mean RTs of unrelated items, unmentioned alternatives and mentioned alternatives (Exp. 2). Error bars represent standard error	81
Fig. 4.3	Mean RTs of unrelated items, unmentioned alternatives, and mentioned alternatives (Exp. 3). Error bars represent standard error	91
Fig. 5.1	Mean RTs for contrastive (<i>left</i>) and non-contrastive probes (<i>right</i>) (Exp. 4). Error bars represent standard error	109

xii **List of Figures**

Fig. 5.2	Mean RTs of possible replacements (<i>left</i>) and non-replacements (<i>right</i>) (Exp. 3). Error bars represent standard error	116
Fig. 6.1	Mean pitch contour of the accented syllable of the focused element in Experiment 5	128
Fig. 6.2	Mean RTs for mentioned alternatives at a delay of zero filler sentences (Exp. 5). Error bars represent standard error	131
Fig. 6.3	Mean RTs for mentioned alternatives at a delay of one filler sentence (Exp. 5). Error bars represent standard error	132
Fig. 7.1	Representation of the alternative set	155

List of Tables

Table 3.1	Mean acoustic parameters of the focused element in the critical sentences [e.g., <i>Pfirsiche</i> in (1)]	48
Table 3.2	Results of mixed effects model for correctly recalled alternatives in Experiment 1a ($n = 713$, log-likelihood = -3506) including fixed effect estimates (top) and variance estimates (bottom)	53
Table 3.3	Mean acoustic parameters of the focused element in the critical sentences (e.g., <i>Hemden</i> in (2))	60
Table 3.4	Results of mixed effects model for correctly recalled alternatives in Experiment 1b ($n = 1476$, log-likelihood = -7373) including fixed effect estimates (top) and variance estimates (bottom)	62
Table 3.5	Mean appropriateness ratings for items used in Experiments 1a and 1b	65

Table 3.6	Results of mixed effects model for appropriateness ratings in Rating Study 1 ($n = 2250$, log-likelihood = -3976) including estimates, confidence intervals and p -values	66
Table 4.1	Word length and frequency of the mentioned alternatives, unmentioned alternatives, and unrelated probes	77
Table 4.2	Results of mixed model for probe recognition experiment 1 ($n = 3429$, log-likelihood = 1160) including estimates, confidence intervals, and p -values based on MCMC sampling	81
Table 4.3	Results of mixed model for lexical decision experiment 2 ($n = 1888$, log-likelihood = 532.8) including estimates, confidence intervals, and p -values based on MCMC sampling	92
Table 5.1	Results of mixed model for replacement analysis ($n = 1696$, log-likelihood = 484.2) including estimates, confidence intervals, and p -values	117
Table 6.1	Mean acoustic parameters of the accented syllable of the focused element in the critical sentences (e.g., <i>Richter</i> in example (1))	129
Table 6.2	Results of mixed effects model for delay zero in Experiment 5 ($n = 803$, log-likelihood = -206.1) including estimates, confidence intervals, and p -values	132
Table 6.3	Results of the mixed effects model for delay one in Experiment 5 ($n = 828$, log-likelihood = -222.6) including estimates, confidence intervals, and p -values	133
Table 7.1	Meta summary of studies manipulating contrastive accenting (N (2006) = Norris et al. (2006); B & T (2010) = Braun and Tagliapietra (2010); H & F (2012) = Husband and Ferreira (2016); B-W (2013) = Byram-Washburn (2013))	141
Table 7.2	Meta summary of studies with focus particles (B-W (2013) = Byram-Washburn (2013); G & S (in rev.) = Gotzner and Spalek (in Revision))	142