



Universiteit
Leiden
The Netherlands

The development of the speech production mechanism in young children : evidence from the acquisition of onset clusters in Dutch

Gulian, M.E.

Citation

Gulian, M. E. (2017, October 31). *The development of the speech production mechanism in young children : evidence from the acquisition of onset clusters in Dutch*. LOT dissertation series. Retrieved from <https://hdl.handle.net/1887/57176>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/57176>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/57176> holds various files of this Leiden University dissertation

Author: Gulian, Margarita

Title: The development of the speech production mechanism in young children : evidence from the acquisition of onset clusters in Dutch

Date: 2017-10-31

The development of the speech
production mechanism in young
children:

Evidence from the acquisition of
onset clusters in Dutch

Margarita Gulian

Published by
LOT
Trans 10
3512 JK Utrecht
The Netherlands

phone: +31 30 253 6111

e-mail: lot@uu.nl
<http://www.lotschool.nl>

Cover illustration: Meike Fortuin performing a pilot perception test at home.

ISBN: 978-94-6093-257-1
NUR 616

Copyright © 2017: Margarita Gulian. All rights reserved.

The development of the speech production
mechanism in young children:
Evidence from the acquisition of onset
clusters in Dutch

Proefschrift

ter verkrijging van

de graad van Doctor aan de Universiteit Leiden,

op gezag van Rector Magnificus prof. mr. C.J.J.M. Stolker,

volgens besluit van het College voor Promoties

te verdedigen op dinsdag 31 oktober 2017

klokke 10.00 uur

door

Margarita Etvart Gulian

geboren te Sofia, Bulgarije

in 1981

Promotores: prof. dr. C.C. Levelt, Universiteit Leiden
 prof. dr. N.O. Schiller, Universiteit Leiden

Promotiecommissie: prof. dr. J.C. Schaeffer, Universiteit van Amsterdam
 prof. dr. F.N.K. Wijnen, Universiteit Utrecht
 prof. dr. L.C.J. Barbiers, Universiteit Leiden
 dr. B.M. van 't Veer, Universiteit Leiden

This thesis is part of prof. dr. C.C. Levelt's VIDI project "A psycholinguistic model for language acquisition" project number 276-75-006, financed by NWO.

Table of contents

Acknowledgments

1 Introduction

- 1.1 Introduction
- 1.2 Different models for speech processing
- 1.3 Different sources of cluster reduction
- 1.4 Different accounts of cluster reduction
- 1.5 The data used in the thesis
 - 1.5.1 The child speech data
 - 1.5.2 The experimental data
- 1.6 Overview of the thesis

2 Production and perception of reduced onset clusters

- 2.1 Introduction
 - 2.1.1 Theoretical background
 - 2.1.2 Covert contrasts in the literature
- 2.2 Study 1: Child productions of /Cr/~C/ and /kn~/k/ word pairs
 - 2.2.1 Participants
 - 2.2.2 Method: /Cr/~C/ word pairs
 - 2.2.2.1 Participant selection
 - 2.2.2.2 Data selection
 - 2.2.2.3 Measurement method
 - 2.2.3 Method: /kn~/k/ word pairs
 - 2.2.3.1 Participant selection
 - 2.2.3.2 Data selection
 - 2.2.3.3 Measurement method
 - 2.2.4 Results of Study 1
 - 2.2.4.1 Results /Cr/~C/ word pairs
 - 2.2.4.2 Results /kn~/k/ word pairs
 - 2.2.4.3 Summary of the results
- 2.3 Study 2: Adult perception of reduced target clusters /Cr/ and /kn/
 - 2.3.1 Method
 - 2.3.1.1 Stimuli: word pairs with onset clusters /Cr/ and /kn/
 - 2.3.1.2 Procedure
 - 2.3.1.3 Participants
 - 2.3.1.4 Analysis
 - 2.3.2 Results
 - 2.3.2.1 /Cr/~C/ word pairs
 - 2.3.2.2 /kn~/k/ word pairs
- 2.4 Discussion
 - 2.4.1 /Cr/~C/ word pairs
 - 2.4.2 /kn~/k/ word pairs
- 2.5 Conclusion

Appendix 1: List of words used for acoustic analysis

Appendix 2: List of children producing cluster reductions

Appendix 3: List of /Cr/~C/ word pairs used for acoustic analysis

Appendix 4: List of /kn~/k/ word pairs used for acoustic analysis

3 A longitudinal analysis of the production of target words with /Cr/ onset clusters

- 3.1 Introduction
- 3.2 Data
- 3.3 Cato's development of the production of target /Cr/ onset clusters
 - 3.3.1 Development of /Cr/ onset clusters
 - 3.3.2 Development of cluster production in *krokodil* 'crocodile'
- 3.4 Developmental stages and the other children
 - 3.4.1 Stage 1: Full deletion
 - 3.4.2 Stage 2: Deletion with a trace
 - 3.4.3 Stage 3: C₂ = vowel or glide substitute
 - 3.4.4 Stage 4: Epenthesis + C₂ substitute
 - 3.4.5 Stage 5: C₂ substitute, no epenthesis
 - 3.4.6 Stage 6: Epenthesis + (immature) rhotic
 - 3.4.7 Stage 7: C₂ is (immature) rhotic
- 3.5 Summary of the results of all children
- 3.6 Co-occurrence of stages
- 3.7 Discussion
- 3.8 Conclusion

Appendix 1: Broad and narrow transcriptions of Cato's productions of words with /Cr/ onset clusters

Appendix 2: Broad and narrow transcriptions of Robin's productions of words with /Cr/ onset clusters

Appendix 3: Broad and narrow transcriptions of Tirza's productions of words with /Cr/ onset clusters

Appendix 4: Broad and narrow transcriptions of Enzo's productions of words with /Cr/ onset clusters

Appendix 5: Broad and narrow transcriptions of Eva's productions of words with /Cr/ onset clusters

4 Two-year-olds' cluster production in naming tasks

- 4.1 Introduction
- 4.2 Background
 - 4.2.1 Young children's performance on production tasks
 - 4.2.2 The (developmental) state of the production mechanism and performance on different tasks
 - 4.2.2.1 The level of lexical access
 - 4.2.2.2 The level of phonological encoding
 - 4.2.2.3 The level of phonetic encoding
 - 4.2.2.4 The level of motor programming
- 4.3 Materials and methods

- 4.3.1 Participants
- 4.3.2 Procedure
- 4.3.3 Material
- 4.4 Results
 - 4.4.1 Quantitative analysis
 - 4.4.2 Intermediate summary
 - 4.4.3 Qualitative analysis
 - 4.4.3.1 Case study Meike (1;11-2;3)
 - 4.4.3.2 Case study Matteo (2;0-2;5)
 - 4.4.3.3 Case study Hannah (2;1-2;6)
 - 4.4.3.4 Case study Lars (1;8-2;7)
- 4.5 Discussion
- 4.6 Conclusion

Appendix 1: Transcriptions of the words and nonwords in Meike's onset cluster development in three production tasks over time

Appendix 2: Transcriptions of the words and nonwords in Matteo's onset cluster development in three production tasks over time

Appendix 3: Transcriptions of the words and nonwords in Hannah's onset cluster development in three production tasks over time

Appendix 4: Transcriptions of the words and nonwords in Lars' onset cluster development in three production tasks over time

Appendix 5: Words and nonwords used in the three production tasks (NWR, PN, WR) and their respective averaged log transitional probabilities

5 **Perception of onset clusters by two-year-olds: the case of /Cl/, /Cr/ and /sC/ clusters**

- 5.1 Introduction
- 5.2 Method
 - 5.2.1 Participants
 - 5.2.2 Stimuli
 - 5.2.3 Procedure
 - 5.2.4 Apparatus
 - 5.2.5 Scoring
- 5.3 Results: Perception of clusters
 - 5.3.1 The results for PTL measure
 - 5.3.1.1 Between-subject factors
 - 5.3.1.2 Planned post-hoc comparisons
 - 5.3.2 The results for LLK measure
 - 5.3.2.1 Between-subject factors
 - 5.3.3 NCDI scores
- 5.4 Results: Production
- 5.5 The link between perception and production
- 5.6 Discussion
- 5.7 Conclusion

Appendix 1: A list of the 27 words used in the familiarization phase

Appendix 2: A list of the 25 trials used in the 1st experimental group

Appendix 3: A list of the 25 trials used in the 2nd experimental group

6 Discussion

6.1 The model

6.1.1 Speech perception

6.2 The initial state of the production mechanism

6.3 Sources of word production errors in young children

6.3.1 underlying form

6.3.2 Phonological encoding

6.3.3 Phonetic encoding

6.4 Variable forms

6.5 The developing speech perception mechanism

6.5.1 Stage 1

6.5.2 Stage 2

6.5.3 Stage 3

6.5.4 Stage 4

6.6 Conclusion

References

English summary

Samenvatting

Curriculum Vitae

Acknowledgements

I would like to thank my supervisors Niels and Claartje for helping me finish up this project called PhD thesis. I would especially like to thank Claartje for helping me rewrite a big piece of the thesis and being so patient with me. I would also like to thank the committee for their useful comments.

I want to thank the children recorded for this thesis and their parents, especially the children recorded for chapter 4, Hannah, Matteo, Maaïke and Lars and their parents.

In one breath, I would like to thank Paul and Caroline for co-authoring chapter 2 and chapter 5, respectively. You helped me give a better presentation of my data. Besides, I want to thank Mirjam de Jonge and Monique Bisschop for being the best lab assistants ever. Last but not least, I want to thank Iris for helping me with the layout of the thesis, thank you for your patience!

I want to give a special thanks to my paranymphs Katja and Jan-Willem, in their role of guarding angels.

Here I would like to thank a bunch of other people, with who I maintain a relationship in one way or another. Since I would hate to rank my relationships to these people I have decided to randomize their names. I am grateful to you all!

I want to thank the ones who helped with the statistics in the thesis, the ones who helped thinking how to order chapter 4, the one with who I worked together on our theses in Zeeland, the ones who joined me to concerts, the ones who danced with me, the one who accompanied me on guitar, the ones who sung with me, the ones who taught me new things, the ones who went jogging with me, the ones who made me feel welcome at the UvA, the one who taught the Leiden PhDs how to play hacky, the ones who patiently shared an office with me, the ones who wrote me long e-mails from the other side of Europe or from another continent, the ones who inspired me with new music, the ones who took care of my kids, the ones who think of me, the ones who love me: Vidhi, Aude, Janitsa, Margarita, Marthy, Irina, Jessie, Marieke, Bilyana, Iviana, Elena, Wolfgang, Tsvetan, Erik, Victoria, Gideon, Roberta, Annemiek, Catherine, Petrus, Paula, Dimitar, Annelies, Roland, Sita, Luz, Irene, Rosa, Aura, Sevda, Meba, Anne, Jurriaan, Charlie, Jos, Robin, Marijn, Linda, Sara, Wieneke, Karin, Elitsa, Arnoud, Maria, Yimmy, Serge, Elitza, Frank, Eti, Marcela, Roman, Nana, Fang, Zheni, Pieter, Angélica, Allison, Ineke, Kathrin, Dessi, Robert, Teo, Rebecca.

A special thanks goes to my parents in law for all their help, literally with everything, superveel bedankt Hennie en Anneke!

ii | Acknowledgements

I also want to thank my parents, Rossi and Edi, my brother and sister, Tani and Paola and my living grandma, baba Tinka, but of course from somewhere far away baba Pepi is constantly supporting me. Нямам думи да ви се отблагодаря за обичта ви!

En natuurlijk mijn gezinnetje, Martijn, Kalina en Radana. Страшно ви обичам и не знаете колко е хубаво, че сте част от живота ми!

