

Advances in the Investigation of L3 Phonological Acquisition

Edited by
Magdalena Wrembel and
Jennifer Cabrelli Amaro



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Advances in the Investigation of L3 Phonological Acquisition

This book aims to bridge the gap in investigations into the acquisition of phonology from a multilingual perspective. In order to fully understand this process, the editors present state of the art research into third language (L3) phonology as well as future considerations for this field. The individual contributions address limitations apparent in current literature, in terms of methodology and scope, while offering innovative solutions in the study of conceptualization, design and data analysis, and novel application of theoretical frameworks to L3 phonology.

The contributions consist of a number of original studies which attempt to address vital research questions regarding a bilingual advantage for subsequent phonological acquisition, the variables that drive phonological transfer at the onset of third language acquisition, the L3 developmental path, and how L3 phonological acquisition affects existing systems.

The empirical and theoretical strides made in the study of L3 phonology, provided in this volume, confirm that it is a promising area of inquiry with a growing potential to provide novel insights into the linguistic and cognitive underpinnings of language acquisition.

This book was originally published as a special issue of the *International Journal of Multilingualism*.

Magdalena Wrembel is a Professor and Head of Studies at the Faculty of English, Adam Mickiewicz University in Poznań, Poland. Her main research areas involve SLA of speech, phonological acquisition of the third language, multilingualism, language awareness as well as innovative trends in pronunciation pedagogy.

Jennifer Cabrelli Amaro is an Assistant Professor of Spanish Linguistics in the Department of Hispanic and Italian Studies and director of the Multilingual Phonology Lab at the University of Illinois at Chicago, USA. Her research centers on adult acquisition and attrition of phonology, and current work focuses on longitudinal development of phonology and morphosyntax in third language acquisition.

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Jennifer Cabrelli Amaro and Magdalena Wrembel

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Chapter 2

The bilingual advantage in L3 learning: a developmental study of rhotic sounds

Romana Kopečková

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Chapter 3

Interactions between three phonological subsystems of young multilinguals: the influence of language status

Romana Kopečková, Marta Marecka, Magdalena Wrembel and Ulrike Gut

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Chapter 4

VOT production by Spanish heritage speakers in a trilingual context

Raquel Llama and Luz Patricia López-Morelos

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Chapter 5

The effects of L2 experience on L3 perception

Hiromi Onishi

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Chapter 6

Multilingual acquisition of vowels in L1 Polish, L2 Danish and L3 English

Jolanta Sypiańska

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Notes on Contributors

Jennifer Cabrelli Amaro is an Assistant Professor of Spanish Linguistics and director of the Multilingual Phonology Lab in the Department of Hispanic and Italian Studies, University of Illinois at Chicago, USA.

Ulrike Gut is a Professor of English Linguistics in the Department of English, University of Münster, Münster, Germany.

Romana Kopečková is a Professor of English Linguistics in the Department of English, University of Münster, Münster, Germany.

Raquel Llana is a part-time Professor of Spanish Linguistics in the Department of Modern Languages and Literatures, and a member of the Language Acquisition Research Lab (LAR LAB), University of Ottawa, Canada.

Luz Patricia López-Morelos is a part-time Professor of Spanish in the School of Linguistics and Language Studies, Carleton University, Ottawa, Canada, and a member of the Language Acquisition Research Lab (LAR LAB), Department of Modern Languages and Literatures, University of Ottawa, Canada.

Marta Marecka is a Postdoctoral Researcher in the Psychology of Language and Bilingualism Lab, Institute of Psychology, Jagiellonian University, Krakow, Poland.

Hiromi Onishi is a Visiting Lecturer of Japanese in the Department of German, Russian and East Asian Languages, Colorado College, Colorado Springs, USA.

Jolanta Sypiańska is an Assistant Professor in the Department of Philology, Koszalin University of Technology, Koszalin, Poland.

Magdalena Wrembel is a Professor and Head of Studies in the Faculty of English, Adam Mickiewicz University, Poznań, Poland.

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Investigating the acquisition of phonology in a third language – a state of the science and an outlook for the future

Jennifer Cabrelli Amaro and Magdalena Wrembel

There is growing recognition that multilingualism is a norm rather than an exception and that it constitutes a default state of human linguistic competence. This phenomenon has become particularly relevant due to widespread, yet variously motivated, population movements as well as job-related mobility and the introduction of multiple foreign languages into school curricula. It has resulted in the emergence of a complex linguistic landscape and raised many questions concerning language development, multilingual use, and cross-linguistic interactions. Consequently, there has been a growing need for investigations into the process of multiple language acquisition since, as some scholars argue, the study of third language acquisition (TLA) can offer new insights into the process of language learning that research on the first or the second language alone cannot provide (e.g. Flynn, Foley, & Vinnitskaya, 2004). Research on the phonological acquisition of a third language (L3) is a newly emerging dynamic area. Several scholars have indicated that this aspect of TLA is an understudied domain which deserves special attention in scientific investigations (e.g. Cabrelli Amaro, 2012; Hammarberg, 1997; Wrembel, 2015c). Until fairly recently, only a handful of studies had dealt with L3 phonetics and phonology, perhaps because researchers tend to focus on linguistic domains in which adult L2 learners outperform child L2 learners, that is, lexis and grammar, rather than phonetics and phonology (see Missaglia, 2010). Irrespective of the rationale due to which L3 phonological acquisition had not played a major role in TLA research until recently, this line of inquiry has seen substantial development over the past few years and can be acknowledged as a subfield in its own right. Recently, we have witnessed a greater presence of research on L3 phonetics and phonology at international conferences including the International Conference on Third Language Acquisition and Multilingualism, New Sounds (International Conference on Second Language Speech), and EuroSLA, among others. Moreover, special workshops devoted to L3 phonology have been organised, including a satellite workshop of the International Congress of Phonetic Sciences (ICPhS) on Phonetics and Phonology in Third Language Acquisition held in Freiburg, Germany, in 2007, a workshop on Advances in the Investigation of L3 Phonological Acquisition at the Societas Linguistica Europaea (SLE) conference in Poznań, Poland, in 2014, and a workshop dedicated to L3 English pronunciation at New Sounds in Aarhus, Denmark, in 2016.

An upsurge of interest in this domain is also reflected in a growing number of related publications. For instance, in February 2010, the *International Journal of Multilingualism* published a Special Issue dedicated to transfer in L3 phonology, which was the first of its kind, guest edited by Wrembel, Gut and Mehlhorn (2010). This special issue aimed to explore new methods and fresh theoretical input for modelling and investigating third language phonological acquisition. Its major focus was on the positive effects of previously acquired languages on the subsequent learning process of an additional foreign language, an area that had remained largely unexplored. The 2010 issue has sparked a lot of interest, has been widely cited (the contributions to the issue have been collectively cited 150 times as of 30 May 2016), and has proven to be one of the major reference sources for a growing body of research on L3 phonetics and phonology. In turn, the present special issue is an outcome of the second workshop on L3 phonology, entitled 'Advances in the Investigation of L3 Phonological Acquisition' organised by Jennifer Cabrelli Amaro and Magdalena Wrembel at the SLE conference in Poznań in September 2014.

As evidenced in the emerging literature in the field of TLA, learners acquiring an additional foreign language (L3/Ln) differ significantly from adult L2 learners mainly due to broadened phonetic repertoire, enhanced perceptual sensitivity, a higher level of meta-linguistic awareness, language-learning experience and strategies, and a range of other factors (e.g. Cenoz & Jessner, 2000; De Angelis, 2007; Gut, 2010). In a recently published volume on 'Universal or diverse paths to English phonology', Gut, Fuchs, and Wunder (2015) draw valuable comparisons between the acquisition of phonology from a second language acquisition (SLA) versus TLA perspective, in an attempt to bridge a theoretical and methodological gap between these two related disciplines. TLA research findings generated so far generally demonstrate complex patterns of transfer between native and non-native languages; yet, they are insufficient to provide a full account of L3 phonological modelling and the factors conditioning cross-linguistic influence (CLI, which we conflate herein with the term 'transfer') in L3 speech. Due to the inherent complexity of research into L3 acquisition, what we know thus far fails to create a clear picture of the multifarious processes involved. Therefore, the main objective of this special issue is to shed additional light on the advancements in research on third language phonological acquisition. Further, it aims to contribute to the development of this field as well as to language acquisition research in a broader sense. This article serves as a state of the science. We begin with a brief overview of studies in the field to establish major findings and limitations, and segue into different methodological issues that this work has yielded. We then outline the major research questions that drive the field of study, and discuss the advances that each of the contributions makes towards answering these questions. Finally, we complement the theoretical discussion with the methodological advances made by these studies and consider some future directions for the area.

Methodological considerations in L3 phonology

The earliest evidence of academic interest in the development of sound systems in multilingual acquisition can be traced back to Chamot (1973), Rivers (1979), and Singh and Carroll (1979). In their reports on individual case studies of multilingual acquirers, the authors made observations on complex patterns of phonetic and phonological interference involving different languages from the informants' repertoires. Although these

earliest accounts relied mostly on impressionistic studies rather than heuristic measurements (e.g. Chamot's, 1973 error analysis of naturalistic data from a French/Spanish bilingual acquiring L3 English), it should be highlighted that the resulting qualitative observations inspired further interest in the area and eventually led to more controlled explorations of CLI in the acquisition of third language phonology. Furthermore, one of the most frequently cited studies in the field of L3 phonology is a pioneering longitudinal case study by Hammarberg et al. (Hammarberg, 2001, 2009; Hammarberg & Hammarberg, 1993, 2005; Williams & Hammarberg, 1998). Their work consists of a holistic investigation into several linguistic domains including phonetics and phonology, spanning several years of learning Swedish as an L3 by an L1 English/L2 German informant. This study laid the foundation for current investigations into third language phonological acquisition.

The present overview of research constitutes a shortened version of more extensive surveys presented in Wrembel (2012, 2015b, 2015c) and Cabrelli Amaro (2012). Its aim is not to provide a comprehensive summary of findings of the research conducted so far, but rather to point to outstanding methodological considerations, many of which are addressed in this special issue.

Due to the inherent complexity of the process of multilingual acquisition, several methodological concerns have been involved in research on L3 phonology to date (see Cabrelli Amaro, 2013b). The remainder of this section will thus feature the following issues: (a) the scope of investigation, (b) key research areas, (c) language pairings/groupings, and (d) research design.

With respect to the scope of investigation in third language phonology, the majority of the studies have focused on production, with very few investigating the perception of L3 speech. This lack of balance seems to be in line with a similar tendency reported in an overview of research on phonology in SLA (see Gut, 2009); yet, the perceptual studies conducted from the TLA perspective are even more limited in their number and scope. Bearing in mind that the most influential models of second language speech have used perception to account for the acquisition of L2 phonology, as pointed out by Cabrelli Amaro (2012, p. 50), it seems indispensable to investigate the production–perception interface from the point of view of L3 phonology. Nevertheless, research into perceptual aspects of L3 phonological acquisition has been rather scarce so far with the exception of a handful of studies by Cabrelli Amaro (2013a, 2016), Kopečková (2013, 2015), and Onishi (2013).

As far as major research areas are concerned, only a number of selected phonetic and phonological features have attracted attention of scholars investigating the L3 field. Moreover, segmentals have received far more coverage than suprasegmental properties, mirroring the trends reported in SLA research (see Gut, 2009). In the realm of L3 segmental studies, the vast majority has focused either on the acoustic measurements of voice onset time (VOT; Llama, Cardoso, & Collins, 2010; Sypiańska, 2013; Tremblay, 2007; Wrembel, 2011, 2015b; Wunder, 2010) as well as vowel formants (e.g. Kopečková, 2015; Lechner & Kohlberger, 2014; Missaglia, 2010; Sypiańska, 2013; see Wrembel, 2015c for a detailed discussion). This specific segmental focus evidenced in research on L3 phonological acquisition runs parallel to the trends observed in SLA studies, according to which VOT and vowels rank the highest as the most frequently investigated aspects of L2 speech (see Hansen Edwards & Zampini, 2008). Conversely, a limited number of studies have been conducted to date on suprasegmental features, including Louriz's (2007) investigation

of word stress; Gut's (2010) case study on speech rhythm and vowel neutralisation; Cabrelli Amaro's (2013a, 2016) study on vowel reduction; and Gabriel, Kupisch, and Thulke's (2014) preliminary investigation into speech rhythm. In addition, Hammarberg and Hammarberg (1993, 2005) pioneered an examination of articulatory re-setting as well as perceived foreign accentedness in L3, a line of research that was continued by Wrembel (2009, 2010, 2012) and Lloyd-Smith, Gyllstad, and Kupisch (2016), and which went beyond the traditional segmental perspective. Thus far, there have been no studies on intonation to our knowledge.

Another methodological issue is related to the language pairings/groupings which have been involved in L3 research. Admittedly, their number and scope are rather limited as most of the studies concern Indo-European languages as target languages, frequently focusing on Germanic and Romance languages, that is, English, German, French, Spanish, Portuguese (e.g. Cabrelli Amaro, 2013a, 2016; Cabrelli Amaro & Rothman, 2010; Gut, 2010; Missaglia, 2010) and, to a lesser extent, Slavic languages (e.g. Kopečková, 2015; Marx & Mehlhorn, 2010; Wrembel, 2010, 2012, 2015a, 2015c) as elements of multilingual repertoires. Including non-Indo-European languages as focal areas of multilingual investigations has been less frequent to date, with some notable examples such as studies on Arabic by Benrabah (1991), Japanese by Tremblay (2007) and Kamiyama (2007), Hindi by Tremblay (2010), or Mandarin Chinese by Gabriel et al. (2014). Including diverse language pairings and more typologically distant sets in research on L3 phonological acquisition may contribute to a more in-depth investigation of the role of typological distance/proximity and structural similarity in this process. Echoing another methodological consideration voiced by Cabrelli Amaro (2013b), we also need to determine whether structural relationships between languages are related to the linguistic system as a whole, to the phonological system, or to a selected phonetic/phonological property. This question has driven a large portion of L3 morphosyntax research for the last decade (see e.g. Rothman, 2015 for an overview) and substantial research will be required to better understand these relationships.

As far as research design is concerned, a vast majority of studies on L3 phonetics and phonology has either focused on a single time point or been cross-sectional in nature. Longitudinal investigations have been rather scarce, with Hammarberg and Hammarberg's (1993, 2005) seminal case study of one informant over several years, and Kopečková's (2013) and Cabrelli Amaro's (2013a) attempts to include more than one data collection time point being noteworthy exceptions to the rule. Still, widening the scope and time scale of multilingual research designs would be highly recommendable in order to explore developmental patterns of third language phonology and to establish the learners' L1 and L2 baseline such that learners are able to serve as their own controls. Moreover, the question of the subject pool selection remains quite vital in the discussion of research design, given the complexity of multilingual participants' profiles. Thus far, studies on L3 phonetics and phonology have relied mostly on rather limited numbers of participants, consequently weakening the desired statistical power of the analyses. However, it is worth noting that a small sample size is often the result of having to control for a large number of variables, which limits the pool of potential participants. For example, Cabrelli Amaro (2016) started out with data from 48 participants, but reduced the pool to 23 participants after considering proficiency requirements in the L2. When working with these smaller sample sizes, alternatives to parametric statistical analysis need to be