

Broad scope and narrow focus: On the contemporary linguistic and psycholinguistic study of L3 acquisition

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Abstract

Aims: In this introduction we situate the seven articles in this special issue in terms of the connections between their themes and their individual contributions to the field of third language acquisition: new theoretical models, innovative methodologies, an epistemological commentary and new perspectives related to multilingual processing and cognitive function.

Approach: We discuss important and often overlooked differences between bi- and multilingualism in the context of L2 vs. L3/Ln acquisition. We also provide a brief historical overview of the relatively young field of L3A and outline the three current models of linguistic transfer in L3 morphosyntax. Finally, we approach the issues of methodology, psychological complexity and cognitive implications that are discussed in some of these papers.

Conclusions: The diversity of topics in these articles endows the issue with a broad approach to the field of L3A, while individual articles offer a narrow focus on specific theoretical and methodological issues.

Significance: This special issue provides an accurate portrayal of the current interest in, and rapid expansion of, multilingualism within linguistic and psycholinguistic approaches.

Keywords: bi- vs. multilingualism, cross-linguistic influence, transfer, theoretical approaches, methodology, initial stages vs. development, order of acquisition vs. structural proximity, wholesale transfer vs. property-by-property learning, executive function.

Background

Prior to the 1960s, little was known about the acquisition and processing of language for people who speak more than one. In fact, at the time the commonly held view was that bilingualism was subtractive for academic, linguistic and cognitive development more generally (e.g., Thompson, 1952). Since then, however, research has shown that such a perspective is not supported. Controlled studies over the past five decades more or less all point in the same direction, showing that children sufficiently exposed to more than one language acquire both effortlessly and display few qualitative differences in the path of acquisition as compared to monolinguals (see, e.g., Meisel, 2011). This does not mean that naturalistic child bilinguals necessarily show equal knowledge of both languages in adulthood. Most bilinguals develop one language more dominantly than the other, especially when one of the two languages is a heritage language, typically limited to the home (see, e.g., Montrul, 2008, 2015). However, where there is fair opportunity to become a balanced bilingual—for example, where schooling and literacy are provided in both languages and/or where there is societal bilingualism—differences between monolinguals and bilinguals in adulthood are less pronounced (see, e.g., Kupisch and Rothman, in press). In addition to knowing that more than one language can be acquired as naturally as one, bilingualism of course affords a myriad of benefits, ranging from communicative, social, emotional and cognitive, potentially across the lifespan (e.g., Bialystok, 2009; see Bialystok, in press, for discussion of the current debate in this regard). It is perhaps not surprising, in this light, that the past few decades have witnessed a sharp increase in linguistic and cognitive science studies of bilingualism (see, e.g., Kroll and Bialystok, 2013; Serratrice, 2013; Slabakova, 2016).

One might wonder if there are inherent and insurmountable differences in subtypes of bilingualism related to age. Can adults who have normally acquired an L1 in childhood acquire additional languages throughout the lifespan? Adult second language (L2) learners are of course a subtype of bilingual, precisely because they too have communicative competencies in more than one language. There is, however, considerable debate as to whether an adult has the same potential to acquire language in the way that children do. The Critical Period Hypothesis (Lenneberg, 1967) applied to L2 acquisition maintains that adults are destined to learn language in a qualitatively different manner and/or represent language differently in the mind/brain as a byproduct of neurological maturation (see DeKeyser, 2000; Long, 2005; Rothman, 2008, for review). Although contentiously debated for decades, much research in adult L2 acquisition—in particular evidence from neurolinguistic and language processing studies—questions the idea that differences between child and adult acquisition, which are observable and thus no one denies, follow from any loss in neurological plasticity associated to language acquisition and processing (see Roberts et al., in press, for review).

If one takes the position that language is in principle acquirable and processable using the same mental apparatus irrespective of age, then one must explain the gamut of variation seen across individual learners that does not pertain to children. At least part of a reasonable explanation will include influence from the L1, otherwise known as cross-linguistic influence (CLI) or transfer. That previous linguistic experience/knowledge affects subsequent language acquisition and performance is virtually undeniable. The extent to which it is a primary or at all an explanatory reason for child vs. adult differences is also a highly contested question in modern language sciences. Furthermore, we know that language-to-language influence is not

only true of the scenario where an L2 acquired in adulthood is affected by an L1. There is considerable evidence indicating that influence can (eventually) be bidirectional, that is, L1→L2 initially and then L2→L1 at later stages of L2 proficiency (e.g., Dussias, 2004; Dussias and Sagarra, 2007). We also know that young children exposed to two languages, either simultaneously (2L1) or successively (child L2), exhibit cross-linguistic influence. In fact, young children acquiring an L2 show very similar patterns of influence from their L1 to those of adult L2 learners (see, e.g., Haznedar, 2013; Schwartz, 2003).

The above is but a mere, non-exhaustive glance at the burgeoning literatures on language acquisition, language processing and the cognitive science of bilingualism that have amassed over the past 50 plus years. Understanding the mental, neurological and linguistic processes of bilingualism, in all types, is crucial because more than half of the world is at least bilingual. In fact, much of the world is truly multilingual. As determined by age of onset, environment and more, like bilingualism, multilingualism applies to a spectrum of contexts under which three or more languages are acquired. Yet, compared to the progress and keen interest that has applied to bilingualism in linguistics, neuroscience, psychology and cognitive science over the past 50 years, very little work has been done on true multilingualism in this same time period. However, in the past decade or so, there has been a sharp increase in interest and research output. Is multilingualism really different from bilingualism or simply more of the same? Will cross-linguistic influence present differently when there is more than one potential source? Will the so-called benefits of bilingualism increase in multilingualism because there are more languages in a single mind? Are the psychological realities the same across bilingualism and multilingualism? If not, what knock-on effects can be predicted for language processing and

production in multilingualism? These are just some questions that at present dominate research programs of multilingualism and, not surprisingly, characterize the research questions addressed explicitly in the papers that comprise this volume. There have been other special issues of journals focusing on the formal linguistic and cognitive aspects of multilingualism in recent years (e.g., Falk and Bardel, 2010 [*International Review of Applied Linguistics*]; García Mayo and González Alonso, 2015 [*Bilingualism: Language and Cognition*]; Rothman, Iverson and Judy, 2011 [*Second Language Research*]). Nevertheless, this one stands out in several ways: Firstly, although the fields of psycholinguistic and formal linguistic studies of multilingualism are young, they have grown exponentially in a very short period of time and this issue represents the true state of the science at present time. Secondly, this issue stands alone in providing contributions that address broad and narrow questions in one place and thus offers cutting-edge views regarding the need for integration between formal and psycholinguistic approaches, as well as the methodological innovations and theoretical insights (including the introduction of several new models of multilingual acquisition and processing) that will prove influential to the expansion of multilingual research in the near future. In the remainder of this introduction, we contextualize the papers that are included in this issue, foregrounding how they fit into the current state of multilingual research.

A brief history

After more than two decades of dedicated research into multilingualism, it is now generally agreed that there are linguistic and cognitive reasons to consider the acquisition of a second (L2) and third or further (L3/Ln) language as distinct processes (e.g., De Angelis and Dewaele, 2011;

Rothman et al., 2013). Until recently, L3 learners were often subsumed, mostly inadvertently—e.g., when so-called L2 populations included multilingual individuals—under the umbrella of second language acquisition (L2A). An important oversight regarding the initial state between an L2 and L3/Ln underlay this practice: second and third language learners (L2ers and L3ers) come to the process with linguistic and relevant cognitive backgrounds that differ both quantitatively and qualitatively. By definition, a true L2er is a monolingual at the initial state of L2 acquisition, whereas an L3 learner is a bilingual—potentially of various types (simultaneous, child L2, adult L2)—at the initial state of L3 acquisition. It is thus particularly relevant to know and then attempt to factor into models of third language acquisition (L3A) what bilingualism itself entails for sequential multilingual acquisition.

With a few notable exceptions (e.g., Klein, 1995; Leung, 2001), early research dealing with multilingual individuals focused mainly on the lexicon. In an extension of long-lasting debates in bilingualism (e.g., Costa et al., 1999; Hermans et al., 1998), the processing literature has typically been concerned with cross-linguistic influence understood as interference in lexical access and retrieval, and with what this phenomenon can reveal about the architecture of the multilingual lexicon (e.g., Dijkstra, 2003; Lemhöfer et al., 2004). Preceded by relatively few seminal papers (e.g., Ringbom, 1986; Singleton, 1987; Stedje, 1977; Vildomec, 1963), the early 2000s witnessed a boom in studies focused on multilinguals as L3/Ln learners, who are vulnerable to instances of CLI related to the creation, development and processing of L3 lexical representations (e.g., Ecke, 2001; Hall and Ecke, 2003; Hammarberg, 2001). While CLI or transfer was almost unanimously assumed to come from either the L1 or the L2, the question remained as to whether one language or the other played a more prominent role and, if so, why.

A number of potential factors were proposed from early on (see, e.g., Hammarberg, 2010, for discussion), including—but not limited to—proficiency, recency of activation, L2 status and typological similarity between the L3 and any pre-existing languages. Note that, even in early literature (e.g., Ringbom, 1986), the latter was considered at the time to be at least partly dependent on learners’ perceptions, thus referred to as ‘psychotypology’ (cf. Kellerman, 1983). Two of these factors received special attention (and gathered empirical support): some of the evidence pointed to a critical role of (psycho)typology (e.g., Cenoz, 2001; De Angelis and Selinker, 2001), whereas other authors (e.g., Ecke, 2001; Hammarberg, 2001) considered the L2 as the *default interlingual supplier* (Williams and Hammarberg, 1998: 304).

Within the last decade or so, these themes have percolated into the emerging field of formal approaches to L3 morphosyntax, where two of the three well established models advocate for L2 status and overall structural similarity (typological proximity), respectively, as the main factor for selection of morphosyntactic transfer in L3, either at the initial stages only or throughout development (e.g., Bardel and Falk, 2007; Rothman, 2011, 2015). This research emerged as a result of pondering how central questions of theoretical importance within the more established field of formal linguistic approaches to bilingualism might be answered differently when applied to multilingualism (e.g., García Mayo and Rothman, 2012; Rothman et al., 2011). To be sure, L3/Ln acquisition presents increased complexity on at least two fronts: the first is the initial stages of interlanguage formation, as multiple grammatical configurations have been realized in the learner’s previous languages and are thus available for transfer (see, e.g., González Alonso and Rothman, this issue). The second is the lower predictability of developmental patterns—linguistically and otherwise—, which will likely be sensitive to CLI

and a myriad of other cognitive factors well beyond the initial stages. Green (this issue), Schroeder and Marian (this issue) and Slabakova (this issue) deal at length with the latter of these two complexities. In the following sections we briefly discuss how the articles in this special issue contribute to pushing the boundaries of the field by expanding on previous topics, innovating in methodology and opening up new questions to be solved in, and through, multilingualism.

Models of transfer in L3 morphosyntax: past, present and future

Irrespective of their theoretical background and the various factors that are put forward as deterministic for L3 development, all of the proposals advanced in the last two decades share an interest in modeling the mechanisms that regulate L3 morphosyntactic transfer. Specifically, the focus has been placed on how the linguistic parser solves the optionality that stems from the unique L3 setting, as two or more systems are in principle available to influence the acquisition of the target L3. Crucially, all models assume that this is not done at random, and that one or more (linguistic and/or cognitive) variables take precedence over others in determining which of the previously acquired linguistic systems will be selected as the source of transfer.

Besides the proposal of different “driving factors”, the models vary along two important dimensions in terms of how they conceptualize transfer in L3 acquisition. The first dimension is temporal, and concerns the stage at which the majority of previous language transfer is assumed to take place (i.e., equally throughout development or at a particular point). The second is quantitative, and has typically been framed in terms of wholesale vs. property-specific transfer. While not entirely mutually exclusive, the different positions taken by the models within these

two dimensions generate different predictions for the initial stages of L3 interlanguage and indeed for L3 development over time. Of course, not all possible combinations have been contemplated in the literature. For example, no formally articulated model advocates wholesale transfer of one of the previous languages beyond the initial stages of L3 acquisition. Similarly, no theory that sees transfer as a property-specific operation limits the scope of its occurrence to any particular stage of development.

Formal linguistic inquiries into L3 acquisition have been dominated by three models of morphosyntactic transfer. These three proposals share the assumption that transfer takes place as a result of cognitive economy, to avoid redundancy in language acquisition overall. The Cumulative Enhancement Model (CEM; Berkes and Flynn, 2012; Flynn et al., 2004) maintains that transfer takes place on a property-by-property basis throughout development. By contrast, the Typological Primacy Model (TPM; Rothman, 2010, 2011, 2013, 2015) was put forward to explicate a hypothesized instance of initial stages wholesale transfer of one of the previously acquired languages, the result of which is taken to be the initial L3 interlanguage grammar. The L2 Status Factor (L2SF; Bardel and Falk, 2007, 2012; Falk and Bardel, 2011; Falk et al., 2015), does not explicitly fall on one side or another—at least in the published record—with regard to a strong position on wholesale vs. property-by-property transfer, but seems to advocate a position whereby the largest amount of default L2 transfer would come at the earliest stages. Each model proposes a main factor driving the selection of a transfer source: maximal facilitation (CEM), order and manner of acquisition (L2SF) and overall structural similarity to the target L3 (TPM).

The present issue formally introduces two new models that share features with the CEM (and, to some extent, with the other theories) and seek to provide a more articulate description of at least two central contentions: property-specific transfer and a constant push for maximal facilitation and non-redundancy in acquisition. Their particular task is to reconcile these two claims with the now abundant evidence of non-facilitative transfer (see, e.g., Falk and Bardel, 2010; Rothman, 2015, for discussion), while spelling out the mechanisms that underlie the process of transfer source selection. The Linguistic Proximity Model (LPM; Mykhaylyk et al., 2015; Westergaard et al., this issue) proposes that structural similarity between the L3 and previously acquired languages takes priority over other factors such as order or manner of acquisition, but that this similarity is considered at the level of individual properties (cf. the TPM). Crucially, and since all prior languages remain active throughout the acquisition process, facilitative influence from a targetlike property in the L1 or the L2 can be limited or even thwarted by non-targetlike influence from the other language.

The Scalpel Model (Slabakova, this issue) expands on this idea by providing a comprehensive—although not necessarily exhaustive—list of factors that conspire to obscure or block the effects of facilitative transfer in L3 acquisition. Slabakova also argues that grammar development in multilingualism is sensitive to property-level variation and hence transfer does not need to obtain in full at the initial stages. She further highlights variables such as processing complexity, misleading input and construction frequency in the target L3 as also applying at a property level—that is, they are different for different grammatical properties—and therefore potentially interfering in the process of similarity evaluation between the languages that is meant to give rise to facilitative transfer.

González Alonso and Rothman (this issue) provide an epistemological commentary on the development of the field. They propose that attempts at modelling transfer phenomena across L3 development itself should ideally expand conservatively from the currently available knowledge base, primarily comprised of studies focusing on novice or lower-proficiency learners. They argue that the predictions of all models, irrespective of their scope, apply most unambiguously to the initial stages of L3 acquisition, when there is a greater demand for the creation and development of new representations. Drawing on data from previous studies, they show how the predictions of the existing models can be followed across development, how these interact with learnability constraints as described in formal linguistic theory, and how several factors are likely to obscure so-called transfer observations as L3 interlanguage development progresses.

Notwithstanding expectable differences in their approach and understanding of transfer phenomena in L3 acquisition, all authors agree that more and better controlled studies will provide essential data to adjudicate between competing proposals. This involves, among other things, the proliferation of methodological standards that allow us to isolate important variables, both for participant groups and for the linguistic structures and items investigated in any given study. To control for speaker profile-related variation, a case has been made for using groups that are mirror images of each other with respect to their L1-L2 background (i.e., L1 *A* – L2 *B* vs. L1 *B* – L2 *A*; e.g., Falk and Bardel, 2010; Rothman, 2011, 2013). When it comes to variation in factors pertaining to linguistic properties, the use of corpora can allow us to objectively measure variables such as construction frequency, which are likely to interact with both CLI/transfer and acquisition throughout L3 development (e.g., Slabakova, this issue). The

following section introduces two articles in this special issue that argue in favour of these methodological criteria to shed light on some of the most contentious variables in multilingualism and non-native language acquisition more generally.

A focus on methodology

Although the majority of research investigating the mechanisms and consequences of transfer in L3 acquisition has been conducted within the domains of morphosyntax and the lexicon, some important contributions have come from studies in phonology (e.g., Cabrelli Amaro and Rothman, 2010; Lloyd-Smith et al., in press; Wrembel, 2010, 2012), some of which explore the less commonly studied phenomenon of regressive transfer—that is, CLI from the L3 to one or both of the previously acquired languages (see, e.g., Cabrelli Amaro and Rothman, 2010). This is the case of Cabrelli Amaro (this issue), where two groups of Spanish-English sequential bilinguals with either Spanish or English as their L1 and Brazilian Portuguese as their L3 are compared in order to investigate the potential effects that the L3 might have on their Spanish phonology, which may be different depending on whether Spanish was acquired before or after puberty. Two methodological aspects of this study are particularly relevant. The first is that the mirror image groups allow the author to control for the age of acquisition (AoA) variable, much in the same way that is proposed for order of acquisition in studies evaluating models of transfer in L3 morphosyntax. The second is that both production and comprehension are tested in the same speakers, reflecting an asymmetry in their performance.

Most of the theories that have been proposed so far to model various phenomena in L3 acquisition hinge on the linguistic parser's ability to evaluate multiple, diverse and often subtle

linguistic cues in the input (see, e.g., Rothman, 2015; Slabakova, this issue; Westergaard et al., this issue). However, as with any attempts at modeling developmental sequences within a particular acquisition setting, it is essential to understand what learners are being exposed to in order to have realistic expectations of the end-states and trajectories we might observe. Wulff (this issue) argues that corpus-linguistics approaches are optimally suited to provide an appropriate characterization of the L3 input. For example, they can tell us how often L3 learners are really exposed to certain constructions, which is not necessarily deducible from raw frequency counts or native speaker intuitions. These methods can enhance our understanding of the variables that ultimately shape L3 interlanguage development, and they are highly compatible with, as well as complementary to, experimental approaches, allowing for a more naturalistic examination of large numbers of factors that would be difficult to control for in an experiment. The use of corpora is also optimally compatible with multiple theoretical understandings of language, especially usage-based approaches, which have been applied to L3 morphosyntactic acquisition in recent years (e.g., Sanz et al., 2015).

New perspectives, new questions

An essential prerequisite to modeling individual differences in L3 development is understanding where this variability originates. Most formal models of L3 morphosyntactic transfer assume that the key to these differences is the diverse landscape of linguistic backgrounds that groups of L3 learners typically present, and derive their predictions on the basis of grouping factors that are, in some way or another, related to learners' linguistic profiles and the chances for interplay between the languages involved for any given speaker. Green (this issue) comments on the

relative validity of this assumption from the perspective of language control systems. In essence, the argument is made that individual L3 interlanguage grammars will be shaped, from the very beginning, by the interfacing of different types of language control processes. These include, for example, the top-down activation of lexical entries and grammatical properties, and the bottom-up interaction of the linguistic input with the set of existing representations. Since the outcome of this interfacing is likely to be different for each individual speaker, the psychological reality of the situation should lead us to expect a larger amount of variability throughout L3 development, even for the same learner groups. In this sense, it may be unreasonable to expect that the predictions of the models are always mutually exclusive and experimentally discernible, even if they predict general trends for particular language triads. In line with other authors (see, e.g., González Alonso and Rothman, this issue), Green suggests that a range of experimental methods applied within longitudinal studies is required to capture the nature of this variability. Indeed, the use of cross-sectional and longitudinal designs is arguably one of the best ways to chart some of these variables across the developmental sequence for the same group of learners. While this type of studies is not unprecedented in the field (e.g., Cabrelli Amaro et al., 2015; García Mayo and Villarreal Olaizola, 2011; Sánchez, 2015), much future work on L3 acquisition is called for to adopt this methodological approach if we seek a better understanding of individual trajectories to L3 proficiency.

One of the most valuable features of this special issue is that it broadens our perspective on multilingualism by questioning tacit assumptions that are in some way the legacy of previous misconceptions. Much in the same way that L3 acquisition was, for decades, not understood as significantly different from L2 acquisition, it is fair to ask whether the consequences of

multilingualism for domain-general cognition are in fact the same as those of bilingualism. For the past 30 years, the psychological literature on bilingualism has accumulated evidence on advantages for bilinguals in terms of cognitive reserve (e.g., Grant et al., 2014; Schweizer et al., 2012), resistance to cognitive decline (e.g., Schroeder and Marian, 2012), inhibitory control (see, e.g., Bialystok, 2009, for review) and enhanced memory generalization in children (e.g., Brito and Barr, 2012). Although some work has been conducted on cognitive functioning in old bilingual vs. multilingual speakers (e.g., Chertkow et al., 2010; Kavé et al., 2008) and aphasia recovery in these two populations (see, e.g., De Bot and Jaensch, 2015, for review), the effects of multilingualism on general cognition have not previously been systematically compared to those of bilingualism. Schroeder and Marian (this issue) provide a thorough review of the available literature contrasting the results of these two populations on several verbal and non-verbal tasks, across the lifespan. Their analysis leaves little room for doubt as to the fundamentally different nature of these two phenomena in terms of their impact on several domains of cognition: while they find cognitive reserve to be enhanced in multilinguals as compared to bilinguals and the advantage in inhibitory control to be comparable in children and young adults, trilinguals do not display the improved memory generalization skills—when compared to monolinguals—that bilingual speakers seem to have.

Conclusion

The past decade's explosion of research into multilingualism is the result of a growing awareness that acquiring (and maintaining) several languages is different from bilingualism, in a number of ways. The seven papers in this special issue address important questions that are

related to multilingual language control processes, cross-linguistic influence/transfer, initial stages vs. development, order of acquisition vs. structural proximity, wholesale transfer vs. property-by-property learning, and the possible effects that multilingualism may have on memory, cognitive reserve and executive function. New theoretical models are proposed, innovative methodologies are discussed, and an epistemological commentary on the development of the field is offered. Together, the papers provide a broad picture of the current state of the art and outline new perspectives and future research questions for the rapidly expanding field of multilingualism and L3/Ln acquisition.

References

- Bardel C and Falk Y (2007) The role of the second language in third language acquisition: the case of Germanic syntax. *Second Language Research*, 23(4), 459–484.
- Bardel C and Falk Y (2012) Behind the L2 Status Factor: A neurolinguistic framework for L3 research. In: Cabrelli Amaro J, Flynn S, and Rothman J (eds), *Third Language Acquisition in Adulthood*, Amsterdam: John Benjamins, pp. 61–78.
- Berkes É and Flynn S (2012) Further evidence in support of the Cumulative-Enhancement Model. In: Cabrelli Amaro J, Flynn S, and Rothman J (eds), *Third Language Acquisition in Adulthood*, Amsterdam: John Benjamins, pp. 143–164.
- Bialystok E (2009) Bilingualism: The good, the bad, and the indifferent. *Bilingualism: Language and Cognition*, 12(1), 3–11.
- Bialystok E (in press) The signal and the noise: Finding the pattern in human behavior. *Linguistic Approaches to Bilingualism*.
- Brito N and Barr R (2012) Influence of bilingualism on memory generalization during infancy. *Developmental Science*, 15(6), 812–816.
- Cabrelli Amaro J (2016, this issue) Testing the Phonological Permeability Hypothesis: L3 phonological effects on L1 versus L2 systems. *International Journal of Bilingualism*. Prepublished March 23, 2016. DOI:10.1177/1367006916637287.
- Cabrelli Amaro J and Rothman J (2010) On L3 acquisition and phonological permeability: A new test case for debates on the mental representation of non-native phonological systems. *International Review of Applied Linguistics in Language Teaching (IRAL)*, 48(2-3), 273–294.
- Cabrelli Amaro J, Amaro F and Rothman J (2015) The relationship between L3 transfer and structural similarity across development. In: Peukert H (ed.), *Transfer effects in multilingual language development*, Amsterdam: John Benjamins, pp. 2–23.
- Cenoz J (2001) The Effect of Linguistic Distance, L2 Status and Age on Cross-linguistic Influence in Third Language Acquisition. In: Cenoz J, Hufeisen B, and Jessner U (eds), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives*, Clevedon: Multilingual Matters, pp. 8–20.

- Chertkow H, Whitehead V, Phillips N, et al. (2010) Multilingualism (but not always bilingualism) delays the onset of Alzheimer disease: Evidence from a bilingual community. *Alzheimer Disease and Associated Disorders*, 24(2), 118–125.
- Costa A, Miozzo M and Caramazza A (1999) Lexical Selection in Bilinguals: Do Words in the Bilingual's Two Lexicons Compete for Selection? *Journal of Memory and Language*, 41(3), 365–397.
- De Angelis G and Dewaele J-M (2011) *New Trends in Crosslinguistic Influence and Multilingualism Research*. De Angelis G and Dewaele J-M (eds), Bristol: Multilingual Matters.
- De Angelis G and Selinker L (2001) Interlanguage Transfer and Competing Linguistic Systems in the Multilingual Mind. In: Cenoz J, Hufeisen B, and Jessner U (eds), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives*, Clevedon: Multilingual Matters, pp. 42–58.
- De Bot K and Jaensch C (2015) What is special about L3 processing? *Bilingualism: Language and Cognition*, 18(2), 130–144.
- DeKeyser RM (2000) The robustness of critical period effects in second language acquisition. *Studies in Second Language Acquisition*, 22, 499–533.
- Dijkstra T (2003) Lexical processing in bilinguals and multilinguals: The word selection problem. In: Cenoz J, Hufeisen B, and Jessner U (eds), *The Multilingual Lexicon*, Amsterdam: Kluwer Academic, pp. 11–26.
- Dussias PE (2004) Parsing a first language like a second: The erosion of L1 parsing strategies in Spanish-English Bilinguals. *International Journal of Bilingualism*, 8(3), 355–371.
- Dussias PE and Sagarra N (2007) The effect of exposure on syntactic parsing in Spanish-English bilinguals. *Bilingualism: Language and Cognition*, 10, 101–116.
- Ecke P (2001) Lexical Retrieval in a Third Language: Evidence from Errors and Tip-of-the-Tongue States. In: Cenoz J, Hufeisen B, and Jessner U (eds), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives*, Clevedon: Multilingual Matters, pp. 90–114.
- Falk Y and Bardel C (2010) The study of the role of the background languages in third language acquisition. The state of the art. *International Review of Applied Linguistics in Language Teaching (IRAL)*, 48(2-3), 185–220.

- Falk Y and Bardel C (2011) Object pronouns in German L3 syntax: Evidence for the L2 status factor. *Second Language Research*, 27(1), 59–82.
- Falk Y, Lindqvist C and Bardel C (2015) The role of L1 explicit metalinguistic knowledge in L3 oral production at the initial state. *Bilingualism: Language and Cognition*, 18(2), 227–235.
- Flynn S, Foley C and Vinnitskaya I (2004) The cumulative-enhancement model for language acquisition: Comparing adults' and children's patterns of development in first, second and third language acquisition. *International Journal of Multilingualism*, 1(1), 3–16.
- García Mayo MP and González Alonso J (2015) L3 acquisition: A focus on cognitive approaches. *Bilingualism: Language and Cognition*, 18(2), 127–129.
- García Mayo MP and Rothman J (2012) L3 morphosyntax in the generative tradition: From the initial state and beyond. In: Cabrelli Amaro J, Flynn S, and Rothman J (eds), *Third Language Acquisition in Adulthood*, Amsterdam: John Benjamins, pp. 9–32.
- García Mayo MP and Villarreal Olaizola I (2011) The development of suppletive and affixal tense and agreement morphemes in the L3 English of Basque-Spanish bilinguals. *Second Language Research*, 27, 129–149.
- González Alonso J and Rothman J (in press, this issue) Coming of age in L3 initial stages transfer models: Deriving developmental predictions and looking towards the future. *International Journal of Bilingualism*.
- Grant A, Dennis NA and Li P (2014) Cognitive control, cognitive reserve, and memory in the aging bilingual brain. *Frontiers in Psychology*, 5(1401), 1–10.
- Green DM (2016, this issue) Trajectories to third-language proficiency. *International Journal of Bilingualism*. Prepublished March 21, 2016. DOI:10.1177/1367006916637739.
- Hall CJ and Ecke P (2003) Parasitism as a default mechanism in L3 vocabulary acquisition. In: Cenoz J, Hufeisen B, and Jessner U (eds), *The Multilingual Lexicon*, Kluwer, pp. 71–85.
- Hammarberg B (2001) Roles of L1 and L2 in L3 Production and Acquisition. In: Cenoz J, Hufeisen B, and Jessner U (eds), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives*, Clevedon: Multilingual Matters, pp. 21–41.
- Hammarberg B (2010) The languages of the multilingual: Some conceptual and terminological issues. *International Review of Applied Linguistics in Language Teaching (IRAL)*, 48(2-3), 91–104.

- Haznedar B (2013) Child second language acquisition from a generative perspective. *Linguistic Approaches to Bilingualism*, 3(1), 26–47.
- Hermans D, Bongaerts T, De Bot K, et al. (1998) Producing words in a foreign language: Can speakers prevent interference from their first language? *Bilingualism: Language and Cognition*, 1(3), 213–229.
- Kavé N, Geyal N, Shorek A, et al. (2008) Multilingualism and cognitive state in the oldest old. *Psychology and Aging*, 23(1), 70–78.
- Kellerman E (1983) Now you see it, now you don't. In: Gass S and Selinker L (eds), *Language transfer in language learning*, Rowley, MA: Newbury House, pp. 112–34.
- Klein EC (1995) Second vs. third language acquisition: Is there a difference? *Language Learning*, 45(2), 419–65.
- Kroll JF and Bialystok E (2013) Understanding the Consequences of Bilingualism for Language Processing and Cognition. *Journal of Cognitive Psychology*, 25(5), 497–514.
- Kupisch T and Rothman J (in press) Terminology Matters! Early Child Bilinguals are Heritage Speakers and Arguments Against the label Incomplete Acquisition. *International Journal of Bilingualism*.
- Lemhöfer K, Dijkstra T and Michel M (2004) Three languages, one ECHO: Cognate effects in trilingual word recognition. *Language and Cognitive Processes*, 19(5), 585–611.
- Lenneberg E (1967) *Biological foundations of language*. New York: Wiley.
- Leung YI (2001) The initial state of L3A: Full transfer and failed features? In: Higgins C and Nguyen H (eds), *The Past, Present and Future of Second Language Research: Selected Proceedings of the 2000 Second Language Research Forum*, Somerville, MA: Cascadilla Press, pp. 55–75.
- Lloyd-Smith A, Gyllstad H and Kupisch T (in press) Transfer into L3 English: Global accent in German-dominant heritage speakers of Turkish. *Linguistic Approaches to Bilingualism*.
- Long M (2005) Problems with supposed counter-evidence to the. *International Review of Applied Linguistics in Language Teaching (IRAL)*, 43, 287–317.
- Meisel J (2011) *First and Second Language Acquisition: Parallels and Differences*. Cambridge: Cambridge University Press.

- Montrul S (2008) *Incomplete Acquisition in Bilingualism. Re-examining the Age Factor*. Amsterdam: John Benjamins.
- Montrul S (2015) *The Acquisition of Heritage Languages*. Cambridge: Cambridge University Press.
- Mykhaylyk R, Mitrofanova N, Rodina Y, et al. (2015) The Linguistic Proximity Model: The case of Verb-Second revisited. In: Grillo E and Jepson K (eds), *39th Boston University Conference on Language Development*, Somerville, MA: Cascadilla Proceedings Project.
- Ringbom H (1986) Crosslinguistic influence and the foreign language process. In: Kellerman E and Sharwood-Smith M (eds), *Crosslinguistic influence in second language acquisition*, pp. 150–62.
- Roberts L, González Alonso J, Pliatsikas C, et al. (in press) Evidence from neurolinguistic methodologies: Can it actually inform linguistic/language acquisition theories and translate to evidence-based applications? *Second Language Research*, 1–19.
- Rothman J (2008) Why all counter-evidence to the critical period hypothesis in second language acquisition is not equal or problematic. *Language and Linguistics Compass*, 2(6), 1063–1088.
- Rothman J (2010) On the typological economy of syntactic transfer: Word order and relative clause high/low attachment preference in L3 Brazilian Portuguese. *International Review of Applied Linguistics in Language Teaching (IRAL)*, 48, 245–273.
- Rothman J (2011) L3 syntactic transfer selectivity and typological determinacy: The Typological Primacy Model. *Second Language Research*, 27, 107–127.
- Rothman J (2013) Cognitive economy, non-redundancy and typological primacy in L3 acquisition: Evidence from initial stages of L3 Romance. In: Baauw S, Dirjkoningen F, and Pinto M (eds), *Romance Languages and Linguistic Theory 2011*, Amsterdam: John Benjamins, pp. 217–247.
- Rothman J (2015) Linguistic and cognitive motivations for the Typological Primacy Model (TPM) of third language (L3) transfer: Timing of acquisition and proficiency considered. *Bilingualism: Language and Cognition*, 18(2), 179–190.
- Rothman J, Iverson M and Judy T (2011) Some notes on the generative study of L3 acquisition. *Second Language Research*, 27(1), 5–19.

- Rothman J, Cabrelli Amaro J and De Bot K (2013) Third Language Acquisition. In: Herschensohn J and Young-Scholten M (eds), *The Cambridge Handbook of Second Language Acquisition*, Cambridge: Cambridge University Press, pp. 372–393.
- Sánchez L (2015) L2 activation and blending in third language acquisition: Evidence of crosslinguistic influence from the L2 in a longitudinal study on the acquisition of L3 English. *Bilingualism: Language and Cognition*, 18(2), 252–269.
- Sanz C, Park H in and Lado B (2015) A functional approach to cross-linguistic influence in ab initio L3 acquisition. *Bilingualism: Language and Cognition*, 18(2), 236–251.
- Schroeder SR and Marian V (2012) A bilingual advantage for episodic memory in older adults. *Journal of Cognitive Psychology*, 24(5), 591–601.
- Schroeder SR and Marian V (2016, this issue) Cognitive consequences of trilingualism. *International Journal of Bilingualism*. Prepublished April 1, 2016. DOI:10.1177/1367006916637288.
- Schwartz BD (2003) Child L2 acquisition: Paving the way. In: Beachley B, Brown A, and Conlin F (eds), *Proceedings of the 27th Annual Boston University Conference on Language Development, Vol. 1*, Somerville, MA: Cascadilla Press, pp. 26–50.
- Schweizer TA, Ware J, Fischer CE, et al. (2012) Bilingualism as a contributor to cognitive reserve: Evidence from brain atrophy in Alzheimer’s disease. *Cortex*, 48(8), 991–996.
- Serratrice L (2013) Cross-linguistic influence in bilingual development: Determinants and mechanisms. *Linguistic Approaches to Bilingualism*, 3(1), 3–25.
- Singleton D (1987) Mother and other tongue influence on learner French. *Studies in Second Language Acquisition*, 9, 327–346.
- Slabakova R (2016) *Second Language Acquisition*. Oxford: Oxford University Press.
- Slabakova R (in press, this issue) The Scalpel Model of Third Language Acquisition. *International Journal of Bilingualism*.
- Stedje A (1977) Tredjespråksinterferens i fritt tal – en jämförande studie [Third language interference in spontaneous speech – a comparative study]. In: Palmberg R and Ringbom H (eds), *Papers from the Conference on Contrasted Linguistics and Error Analysis, Stockholm & Åbo, 7–8 February*, Åbo: Åbo Akademi, pp. 141–158.

Thompson GG (1952) *Child psychology: Growth trends in physiological adjustment*. Oxford: Houghton Mifflin.

Vildomec V (1963) *Multilingualism*. Leiden: A.W. Sythoff.

Westergaard M, Mitrofanova N, Mykhaylyk R, et al. (in press, this issue) Crosslinguistic influence in the acquisition of a third language: The Linguistic Proximity Model. *International Journal of Bilingualism*.

Williams S and Hammarberg B (1998) Language switches in L3 production: Implications for a polyglot speaking model. *Applied Linguistics*, 19(3), 295–333.

Wrembel M (2010) L2-accented speech in L3 production. *International Journal of Multilingualism*, 7, 75–90.

Wrembel M (2012) Foreign accentedness in third language Acquisition; the case of L3 English. In: Cabrelli Amaro J, Flynn S, and Rothman J (eds), *Third Language Acquisition in Adulthood*, Amsterdam: John Benjamins, pp. 281–309.

Wulff S (2016, this issue) What learner corpus research can contribute to multilingualism research. *International Journal of Bilingualism*. Prepublished October 16, 2015. DOI:10.1177/1367006915608970