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Julia Herschensohn, *Language development and age*. Cambridge: Cambridge University Press, 2007. Pp. xiv + 289.

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Julia Herschensohn's book provides a detailed evaluation of the question of whether there is a critical period in first language (L1) and second language (L2) acquisition. Taking great care to specify the criteria which need to be fulfilled in order to speak of a critical period, she systematically reviews the evidence from several hundred studies from a broad range of populations, including both monolingual and bilingual L1 children, L2 children and adults, and including both typically developing and atypical populations such as SLI (Specific Language Impairment) children and deaf learners. Her conclusion is that while there is considerable evidence for a critical period in L1 acquisition, with major deficits occurring after age twelve, the evidence for biologically determined age effects amongst L2 learners remains unclear, calling into question the existence of a critical period in L2 acquisition.

Chapter 1, 'Just in time: Is there a critical period for language acquisition?', introduces the central themes of the book and provides a detailed review of background literature on critical periods in embryonic biology. Following work by Bornstein (1987), the author outlines the criteria for defining a critical period, which are then used in subsequent chapters to evaluate the evidence from L1 and L2 acquisition. These criteria, formulated as a series of questions, are: 'What is the organismic system? What is the environmental input? What maturational threshold marks the onset? What is the duration of the developmental period? Does the terminus mark an irreversible change after which the input no longer has effect?' (11–12). Much of the chapter is dedicated to a discussion of language and the brain, and in particular, to the seminal work by Lenneberg (1967). The chapter ends with a brief discussion of the two main streams of theorising in language (acquisition) research, namely the associationist approach, whose roots lie in the behaviourist approach of Skinner (1957), and which today involve connectionist and emergentist approaches, and the modularity approach, which assumes that cognition has separate, dedicated modules which are in part pre-programmed, that is, innate. Though Herschensohn assumes a genetic predisposition for language, she is careful to emphasise the importance of factors relating to the input, such as frequency and saliency.

Chapter 2, 'Right on time: Process and schedule of first language acquisition', consists of a detailed overview of what typical L1 development looks like in various domains (phonology, lexicon, syntax, morphology), in order

to be able to evaluate in the following chapter whether there is a critical period for L1 acquisition. A critical period involves interaction between an organismic system and environmental input. In L1 acquisition in typical circumstances, the organismic system is the infant's brain and the input is the ambient language or positive linguistic data.

In chapter 3, 'All in good time: A window of opportunity for first language acquisition', Herschensohn reviews the evidence for the existence of a critical period in L1 acquisition from studies where one of these two factors – the system or the input – is different from typical L1 development in some way. First, she considers studies of children with Down Syndrome, Williams Syndrome and SLI, finding that despite differences in brain structure, these children pattern similarly in their linguistic development (at least as far as English is concerned, the most studied language in this regard). Next, Herschensohn examines studies of various groups of children who have limited input, either due to a delay as a result of deprivation or a late diagnosis of deafness, or because they were exposed to input from a pidgin rather than a fully-fledged language. Taken together, the results suggest that although children are able to overcome impoverished input, as, for example, by turning a pidgin into a creole, they need to be exposed to input before age six if they are to develop native-like L1 abilities. After this age, the likelihood of doing so decreases until around age twelve, whereafter major deficits are found, although, as Herschensohn notes (99), whether age twelve can conclusively be considered the terminus of a critical period is difficult to say given the paucity of data from delayed L1 acquisition after this age.

Chapter 4, 'Behind time: Process and schedule of second language acquisition', follows the same structure as chapter 2, but considers L2 acquisition. In this chapter, adult L2 acquisition is compared with L1 acquisition, and the differences and similarities between the two processes are evaluated. The author concludes that L2 adults are able to develop knowledge of the target language which is qualitatively similar to native speakers. The errors which they make and the route of acquisition which they follow are systematic, but they are not always the same as in L1 acquisition. Furthermore, development may differ for different domains of language; for example, it has been found that L2 adults may have persistent errors in morphology at the same time as having (more or less) native-like syntax.

Chapter 5, 'Pressed for time: Age constraints in second language acquisition', evaluates the evidence in favour of a critical period in L2 acquisition. Herschensohn starts by considering the answers to the questions laid out in chapter 1, which serve as the criteria for defining a critical period. She notes that in terms of the organismic system and the environmental input, L2 acquisition is crucially different from L1 acquisition: the organismic system has already developed a language, as well as other cognitive skills, and the input often includes more than the positive linguistic data available to L1 children, for example, instruction and scaffolding devices. Herschensohn

observes that when it comes to L2 acquisition, the lack of consistent answers to the remaining three questions means that it makes little sense to try and evaluate the existence of a critical period in these terms: both the onset and duration of development vary considerably, and there is also no clear-cut terminus after which acquisition is completely impossible. Rather, she writes, it is necessary to 'take a more encompassing view of sensitive periods in terms of age constraints rather than thresholds' (136). Evaluating the existence of a critical period in L2 acquisition is complicated by numerous other, non-biological factors, which may facilitate as well as inhibit successful acquisition, and according to Herschensohn it is these, rather than biological factors, which account for many of the differences between (adult) L2 acquisition and L1 acquisition, as discussed, for example, by Bley-Vroman (1990) as part of his Fundamental Difference Hypothesis.

Much of chapter 5 focuses on child L2 acquisition, in typical and atypical circumstances, and in comparison with L1 and adult L2 acquisition. Herschensohn observes that child L2 acquisition patterns in many respects like adult L2 acquisition, for example, with different domains of language developing at different rates, and that as in L1 acquisition, children whose organismic structure is different in some way (for example, children with SLI) are able to acquire second languages, although they may face similar difficulties as in their L1.

It is in this chapter that we also find a review of the numerous studies which compare L2 learners with different ages of onset, what might be considered the classic L2 critical period studies, such as Johnson & Newport (1989). As is well known, age of onset has been found to correlate inversely with achievement in phonology and morphosyntax. However, as Herschensohn notes, there is little evidence for a terminus at the age of twelve, as she found in chapter 3 for L1 acquisition. The observation that there exist both L2 children who fail to attain native-like levels and L2 adults who (to all intents and purposes) succeed in doing so, suggest that these maturational effects cannot be due to a biologically determined critical period. She concludes that '[i]f the evidence for maturational decline for complete acquisition of first language is compelling, the evidence for a sensitive period for L2A[cquisition] is inconclusive at best' (171).

Chapter 6, 'Biding time: Further consideration of age and acquisition', explores the contribution of non-biological factors to age effects in L2 acquisition. These include external factors, such as native language transfer, socio-cultural factors, such as interpersonal interaction, input and instruction, and internal factors, such as acculturation and affective disposition, motivation, aptitude and cognitive influences. The bulk of the chapter is concerned with a detailed discussion of language in the brain, with sections on neural architecture and the neuroanatomical development of language, as well as a review of recent literature on L2 processing from behavioural studies and studies using Event-Related Potentials and neuroimaging. The

overall conclusion from this review is that the differences between L2 learners and natives in terms of language processing are quantitative rather than qualitative; 'at initial stages, adult L2 learners may show quite nonnative-like neural responses, but with advanced proficiency they gain qualitatively similar processing mechanisms' (210).

In the final chapter, 'It's about time: Evaluation of age sensitivity in language acquisition', Herschensohn brings together the evidence discussed in the preceding six chapters concerning age effects in language acquisition, and, in particular, the existence of a biologically determined critical period. At the end, she speculates about the evolutionary implications of her findings, wondering why human language is '*not* susceptible to a critical period as are communication systems of other species' (241; italics in original).

The strength of this book lies in the breadth and depth of its discussion, which incorporates a vast body of literature on age effects in language acquisition from learners in a wide range of circumstances. Herschensohn not only discusses the cases usually included in reviews on this topic (e.g. Curtiss's (1977) study of Genie or Johnson & Newport (1989) and follow-up studies), she also incorporates recent findings on L1 children with Down Syndrome, Williams Syndrome and SLI, L2 children with SLI, the acquisition of sign language as L1 and L2, as well as the development of oral language in children with a cochlear implant, children who develop their own sign language, children exposed to pidgin and the language development of international adoptees. Although she adopts a nativist approach, assuming the existence of innate constraints on language acquisition for both L1 and L2 acquisition, she still acknowledges and takes time to explore the role played by other factors, claiming that 'the most convincing models [of language acquisition] take all factors into account, noting that the importance of different influences changes with increasing age' (228). Herschensohn does not simply ask the (time-old) question of whether differences between typical L1 acquisition and (adult) L2 acquisition are due to differences in age of onset, that is, to maturation; rather, she quite rightly notes that we need to differentiate between effects due to age and those due to the experience of having acquired another language. This is typical of the nuanced approach which is taken throughout the book.

The book's cover matter does not make any claims concerning its intended audience. Though written in a generally accessible style, some basic knowledge of linguistic concepts is assumed, and consequently, in terms of using the book for teaching purposes, it would probably best suit graduate students, although some sections would certainly be appropriate for use in advanced undergraduate courses. The book has a clear overall structure, although the logical structure of the final two chapters is sometimes a little difficult to follow, as it is easy to become overwhelmed in the details of particular studies. More generally, in bringing together findings from so many different fields and learner populations, Herschensohn has written a

book which will most certainly function as a rich resource for scholars interested in age effects in language acquisition for many years to come.

REFERENCES

- Bley-Vroman, Robert. 1990. The logical problem of foreign language learning. *Linguistic Analysis* 20.1/2, 1–17.
- Bornstein, Marc H. 1987. Sensitive periods in development: Definition, existence, utility and meaning. In Marc H. Bornstein (ed.), *Sensitive periods in development: Interdisciplinary perspectives*, 3–18. Hillsdale, NJ: Lawrence Erlbaum.
- Curtiss, Susan. 1977. *Genie: A psycholinguistic study of a modern-day 'wild child'*. New York: Academic Press.
- Johnson, Jacqueline & Elissa Newport. 1989. Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology* 21.1, 60–99.
- Lenneberg, Eric H. 1967. *Biological foundations of language*. New York: Wiley.
- Skinner, B. F. 1957. *Verbal behavior*. New York: Appleton-Century-Crofts.
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David Lightfoot, *How new languages emerge*. Cambridge: Cambridge University Press, 2006. Pp. ix + 199.

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Language change and evolution are phenomena that have long fascinated linguists and non-linguists alike. Any theory of grammar must account for the fact that language is, by its very nature, in a continuous process of change. The flip side of change is language evolution, when new languages appear, sometimes ex nihilo, as in the case of new sign languages in Nicaragua and Israel. In his wide-ranging study, *How new languages emerge*, David Lightfoot shows that the emergence of novel grammars, while part of language change, is a phenomenon of much broader scope that may shed new light on well-studied cases of morphosyntactic change. The book presents a synthesis of Lightfoot's pioneering work over the past forty years and is an engaged manifesto for a new historical linguistics, which is conversant with such diverse disciplines as 'grammatical theory, language acquisition, discourse analysis, and social variation in grammar' (viii).

How new languages emerge comprises a brief preface, eight somewhat essayistic chapters, a bibliography and a subject index. Addressing a readership that does not necessarily have an extensive background in language science, it is lucidly written, without entering into too much technical discussion. Yet, while the introductory chapters are very accessible, the later