UvA-DARE (Digital Academic Repository)

Fundamental issues in the study of second language acquisition

Hulstijn, J.H.

DOI

[10.1075/eurosla.7.11hul](https://doi.org/10.1075/eurosla.7.11hul)

Publication date

2007

Published in

EUROSLA Yearbook

[Link to publication](#)

Citation for published version (APA):

Hulstijn, J. H. (2007). Fundamental issues in the study of second language acquisition. *EUROSLA Yearbook*, 7, 191-203. <https://doi.org/10.1075/eurosla.7.11hul>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Fundamental issues in the study of second language acquisition

Jan H. Hulstijn
University of Amsterdam

The study of second language acquisition (SLA) forms a young academic discipline, emerging from fundamental paradigm shifts in SLA's parent disciplines, linguistics and psychology. This paper gives a brief overview of how the study of SLA came into existence, formulates the fundamental questions concerning SLA, reviews some recent developments, and identifies possibilities and challenges for SLA theory construction and empirical research in the near future. To tackle the fundamental issues of SLA successfully, it is mandatory that SLA researchers, of whom the majority currently has a linguistic background, collaborate with researchers in psychology and other disciplines.

Introduction

This paper expresses some concern with the theory of, and research into, second language acquisition (SLA). Although the history of the study of SLA spans less than fifty years, the field already exhibits signs of disintegration (Long, 2007). SLA researchers working in different areas are not familiar with each other's theoretical frameworks. Researchers with different training backgrounds (linguists, psychologists, educationalists) do not sufficiently profit from each other's expertise and too seldom do they engage in collaborative research. This would not be catastrophic if indeed the main issues in the SLA field had little in common. I argue in this paper, however, that all SLA topics, albeit often indirectly, are ultimately concerned with the way in which the mind/brain of the L2 learner represents and processes linguistic information. The approach to theory construction and empirical research which I adopt in this paper, is based on critical rationalism (Jordan 2004).

The paper is structured in the following way. Section 2 sketches the emergence of the SLA discipline and its short history. Section 3 provides a list of issues that I consider fundamental to the study of SLA. After a brief reference to research on educational issues (Section 4), I turn to the five main strands in the SLA literature:

representation and processing (Section 5), communicative interaction, learner attributes, and social context (Section 6). In the concluding section (7), I propose that researchers focus on the fundamental issues listed in Section 3, which, directly or indirectly, are concerned with the representation and processing of linguistic information.

The Cognitive Revolution and the emergence of SLA as a discipline

The period between 1955 and 1965 marks an important turning point in the history of linguistics and psychology. Chomsky's *Syntactic Structures*, was published in 1957, while *Plans and the Structure of Behavior*, written by Miller, Galanter and Pribram, appeared in 1960. The former book marked the decline of structuralist linguistics and the rise of generative linguistics; the latter marked the decline of behaviorist psychology and the rise of cognitive psychology. During this *Cognitive Revolution*, psychologists and linguists, sometimes working together (Miller and Chomsky 1963), took a new interest in each other's work: psychologists realized that language is perhaps the most typical faculty of the human species whereas linguists acknowledged that a theory of language must address the fundamental issue of the learnability of language. A new academic discipline emerged, called *psycholinguistics*, (this word was used by Miller in a 1954 paper). Linguists and psychologists alike began to look at the acquisition of a first language (L1) through new theoretical glasses, which led to a wave of L1 acquisition studies in the late sixties and early seventies. And shortly thereafter researchers became interested in the acquisition of a foreign or second language (L2). Some began to investigate whether the developmental stages found in L1 acquisition (Brown 1973), could also be found in L2 acquisition (Hatch 1975), while others began to consider the ramifications of the revolution in linguistics and psychology for L2 learning and L2 pedagogy (e.g. Allen and Corder 1975). Over the years, universities set up programs in second-language acquisition (SLA) at the graduate and PhD level, and international organizations were founded, bringing together SLA researchers from all over the world (e.g. *Association internationale de linguistique appliquée* (AILA), *European Second Language Association* (EUROSLA), *International Symposium of Bilingualism* (ISB), *Second Language Research Forum* (SLRF), and *Pacific Second Language Research Forum* (PacSLRF)).

Over the last fifteen years, a fair number of textbooks in the field of SLA have been published to be used in undergraduate and graduate courses (e.g. at the undergraduate level, in chronological order, Cook 1991, 1993; Lightbown and Spada 1993, 1999, 2006; Gass and Selinker 2001; Mitchell and Myles 2004; Saville-Troike 2005; De Bot, Lowie and Verspoor 2005; and, at the graduate level, Larsen-Freeman and Long 1991; Ellis 1994; Sharwood Smith 1994; Towell and Hawkins 1994;

Ritchie and Bhatia 1996; Doughty and Long 2003). A comparison of these textbooks allows five main “strands”, “perspectives” (Lightbown and Spada 1999, 2006) or “approaches” (Mitchell and Myles 2004) to be discerned in the empirical SLA literature. They are concerned with (1) the representation and (2) the processing of linguistic information, (3) the communicative interaction among L2 learners or between L2 learners and native speakers of the L2, (4) learner attributes, and (5) social context. Before I present and evaluate these five literatures (in Sections 5 and 6), I provide a list of what I see as fundamental issues.

Fundamental issues in SLA research

According to Popper (1959), perhaps the best way to characterize a field of scientific inquiry is to formulate the “puzzling phenomena” that it seeks to explain. For the field of SLA, such phenomena exist. In this section, I briefly present what I see as the most important issues in the SLA field that pertain to these phenomena.

The poverty of the stimulus problem

The poverty of the stimulus problem, also known as the logical problem of language acquisition or Plato’s problem (Cook and Newson 1997), can be informally phrased in the following way: With the words of a language, one can generate an infinitely large set of grammatical sentences as well as an infinitely large set of ungrammatical sentences. Children are exposed to only a subset of grammatical sentences. How do children manage to induce the grammar of their L1, when the evidence available to them is so meager? One explanation of this problem is to claim that children are born with some highly abstract knowledge of linguistic principles, common to all natural languages (Universal Grammar — UG). This UG sufficiently constrains children’s language learning task and allows them to successfully induce the grammar of their L1 from the evidence available in the input. It is a matter of considerable debate whether for L2 learners an induction problem exists of a kind similar to the one for L1 learners. There are different positions in the literature with respect to the question of whether, and to what extent L2 learners are guided by UG in their L2 acquisition task (Mitchell and Myles 2004; White 2003).

The age question

The second main SLA problem is concerned with the well-known age question, which can be informally formulated as follows: It appears that children are faster and ultimately more successful L2 learners than adults. If this turns out to be true,

how do we explain this difference? This question has produced a host of theoretical explanations and empirical studies, magnificently summarized by Hyltenstam and Abrahamsson (2003). Some researchers claim that a critical period for language acquisition exists (or several critical periods for several linguistic domains), while others deny the existence of a critical period for both L1 and L2 acquisition. In either case, the question arises: How do we explain the presence or absence of a critical period? This explanatory issue leads to the role of biological and socio-psychological factors. From the theoretical and empirical literature, Hyltenstam and Abrahamsson (2003) tentatively conclude that there is a critical period and that both biological and socio-psychological factors play a role in and after the critical period. While biological factors play a more important role than socio-psychological factors *in* the critical period, socio-psychological factors play a more important role than biological factors *after* the critical period. This conclusion, in turn, leads to further questions with respect to the relative weight of various socio-psychological factors (e.g. learning context, quantity and quality of input, learner attributes, e.g. attitudes, motivation, aptitude).

Differences in learning outcomes

Research into the age question has raised other issues. Regardless of whether there is a critical period for L2 learners for the attainment of native-like proficiency, it is an undisputed fact that only very few adult L2 learners attain a native level and that not all child L2 starters ultimately turn out to be equally successful. These facts then raise the question of how differences in learning outcomes can be explained. The causes of some of the differences may be trivial (e.g. vast differences in exposure to the target language) but the causes of others may not be (e.g. differences in the quality of L2 input yet with the same quantity of input).

Learning mechanisms

Not all fundamental issues need to be of the *why* type, seeking explanations for puzzling phenomena. They can also be of the *what* or *how* type. Perhaps the most essential question for understanding language acquisition is: What are the mental and physical *mechanisms* in the mind/brain that drive acquisition? What must happen for a linguistic element to be acquired? To what extent is language acquisition an autonomous, implicit process taking place whenever an individual is exposed to language input? Is a certain amount of attention required? What are the neurophysiological and mental determinants of language acquisition? To what extent is development driven by linguistic causes? Does the acquisition of one linguistic element trigger the acquisition of another element?

Differences between L1 and L2 acquisition

A related fundamental issue concerns differences between L1 and L2 acquisition. To what extent are different mechanisms at play? Does the fact that an L2 learner has already acquired (or started to acquire) an L1, mean that L2 acquisition is driven by other or additional mechanisms?

Language proficiency questions

If one wants to demonstrate (or falsify) that L2 learners, who began learning their L2 at different ages, can reach levels of proficiency indistinguishable from native speakers, one has to define and operationalize what the native-speaker level of proficiency is. This illustrates how research into one explanatory issue (explanation of age differences) may lead to other intriguing issues: What is language proficiency? What are the defining characteristics of adult native-speaker proficiency? In which linguistic domains is it possible for L2 learners to attain a native level of proficiency?

External factors

While questions concerning learning mechanisms pertain to what may be called *internal* (i.e. neurophysiological and mental) causes that drive acquisition and development, other questions emerge when we look at what may be called *external* factors, such as quality and quantity of L2 input, the social setting of L2 acquisition, so called learner variables, and so called L2 learning aptitude. Examples of learner variables are the L2 learner's motivation to learn the L2, attitudes to the L2, attitudes to L2 native speakers and their country or culture. The notion of learning aptitude itself raises questions with respect to its componential structure (Skehan 2002). Language learning aptitude is unlikely to be a unitary construct. It is more likely that aptitude is a combination of (1) information-processing abilities, such as verbal working memory capacity and sound-discrimination capacity, (2) certain kinds of declarative knowledge, such as explicit metalinguistic knowledge (including literacy), and (3) strategic problem-solving skills.

Stages of development

An example of a what-question that may lead to a why-question concerns stages of development and their sequence. The what-question is: Are there stages of language development? If so, do we find the same developmental stages for learners of different ages, learners of different mother tongues, learners in different learning

settings, etc.? The ensuing why-question is: How do we explain the presence or absence of developmental sequences for various groups of learners?

Popper's (1959) point is that, although an initial explanatory question may not soon or perhaps ever be resolved (as in the case of the age question of L2 learning), the concerted focus of scholars on theory construction and empirical research concerning that question will increase our *understanding* not only of the phenomena involved in the original why question but of many related phenomena as well. Explanation creates insight, albeit that "our understanding of a phenomenon is always incomplete, partial, and probabilistic" (Kerlinger 1979: 7).

Fundamental versus applied research

A field of scholarly inquiry finds its rationale first and foremost in addressing fundamental questions like the ones mentioned in the previous section. This, however, does not rule out that scientific research produces information relevant to the solution of practical problems. This is certainly true of SLA research. One can think of many "applications" of SLA research in the realm of second language teaching, assessment, and remediation of language-related deficiencies. This is illustrated by (1) empirical work on comprehensible input and learner uptake in conversations between L2 learners and native-speakers (Gass 2003; Mackey in press), (2) more than forty years of empirical research on the effect of various types of explicit instruction (DeKeyser 2003; Doughty and Williams 1998; Ellis 1994: Chapter 14), and (3) recent work on task-based instruction (Ellis 2005).

Thus, not all SLA research needs to have explanatory goals. Much SLA research — perhaps even most SLA research — is descriptive, motivated by the desire to solve practical problems. Following Popper (1959), however, I would like to argue that a serious risk threatens the "real world of application", if SLA researchers do not continue to address fundamental questions. The risk is that the nonscientific community will simply take the theoretical basis of practical applications for granted. This has happened many times in the history of L2 teaching, when practitioners based their teaching method on a particular theory, without acknowledging that there simply is no such thing as a "correct theory". We know that it will never be possible to prove a theory right. It is therefore mandatory to try to falsify theories of the fundamental issues listed above, replacing these theories by less imperfect ones. In short, as Kerlinger (1979: 15) put it, "The purpose of science is theory".

Representation and processing

A substantial part of the SLA literature stems from Chomskyan generative linguistics (e.g. Hawkins 2001, White 2003). It seeks to describe the linguistic knowledge (competence) of L2 learners at initial, intermediate and end stages of L2 development, as mediated by Universal Grammar, taking the influence of previously learned languages into account. One of its main goals is to explain the so called *poverty of the stimulus paradox* mentioned earlier. Not all researchers adopt the generative framework. Klein and Perdue (1997) and their coworkers, for instance, well known for their Basic Variety, work in a functionalist framework. Like the generativists, however, they seek to describe learners' L2 knowledge at various stages of development.

Another substantial strand in the SLA literature is based on insights taken from cognitive psychology (and cognitive science, in general). Researchers in this school seek to describe the way in which L2 learners process linguistic information at beginning, intermediate and advanced stages of development. Much work in this school, often labeled as the "cognitive approach", is concerned with *implicit* versus *explicit learning* (DeKeyser 2003; Hulstijn 2005) and *skill acquisition* (Segalowitz 2003; Segalowitz and Hulstijn 2005). Some textbooks also count the *Competition Model*, *Connectionism* and *Emergentism* as a "cognitive" approach (see, for example, MacWhinney 2005, Ellis 2006a, 2006b). It is rather unfortunate that some SLA textbooks use the label "cognitive" only to refer to the psychological strand in the literature. Cognition is a general term, referring to the representation and processing of any information in the mind. Thus, linguistics is concerned with cognition just as well as psychology.

The linguistic and psychological SLA literatures can be broadly contrasted in the following way. Until recently, most linguists adopted a *static* approach to SLA, focusing on the *representation* of L2 information at all *stages* of L2 acquisition, while many researchers with a *psychology* background adopted a *dynamic* approach to SLA, focusing on the way L2 learners *process* L2 information.

Fortunately, researchers of first and second language acquisition have made progress in linking the representation and processing approaches. The last twenty years have produced theories and models, often rather loosely (and not always entirely appropriately) labeled *connectionist* models. What they have in common is that they attempt to give an account of the representation and the processing of linguistic information in a single model. They differ with respect to whether they are of the exclusively subsymbolic, exclusively symbolic, or of the mixed type. Well known theories of language acquisition, wholly or partly associated with connectionist models, have been proposed by Elman (1999), Tomasello (2003) and

MacWhinney (2005). In the SLA field, an outspoken advocate of this new school, often called *Emergentism*, is Ellis (2002, 2006a, 2006b).

It is not only scholars in the emergentist school who bring representation and processing under the umbrella of a single theory. Several linguists have done so too, linking grammars with processing mechanisms, in order to account for development and acquisition. For instance, in his *Processability Theory*, Pienemann (1998, 2003) makes explicit, formal links between the linguistic theory of Lexical Functional Grammar (Kaplan and Bresnan 1982), accounting for the representation of linguistic information, and Levelt's (1989) psycholinguistic theory of speaking, accounting for the processing of linguistic information. A second example is Carroll's *Autonomous Induction Theory* (Carroll 2001, 2002), which aims to account for the constrained nature of the acquisition of linguistic knowledge by adopting a generative, symbolic approach to the representation of knowledge and by specifying the way in which linguistic information is processed by parsers. Under this account, parsing procedures are revised over time, making novel linguistic information available to the learner. So far, Autonomous Induction Theory has mainly focused on acoustic-phonetic cues to word learning.

A third recent attempt by linguists to link the static and dynamic aspects of SLA, is the *Modular On-line Growth and Use of Language* (MOGUL) framework (Truscott and Sharwood Smith 2004; Sharwood Smith and Truscott 2005), based on Jackendoff's (2002) tripartite architecture of phonological, syntactic and conceptual knowledge, linked with modular-specific processors. Activation and competition form essential features of the MOGUL framework. What the theories of Pienemann, Carroll and Sharwood Smith have in common, is that they zoom in on the internal *mechanisms* of language learning, linking the representation and the processing of linguistic information. And it is precisely a theory of learning *mechanisms* that lies at the heart of our understanding of SLA phenomena.

An unresolved issue between the Emergentist-subsymbolic and linguistic-symbolic schools is the question of how symbolic, higher-order linguistic knowledge can emerge or be induced from subsymbolic, lower-order knowledge, *if it is true* that linguistic cognition can best be described as a combination of symbolic and subsymbolic knowledge (Hulstijn 2002, 2006).

Communicative interaction, learner attributes, and social context

The SLA literature is not only concerned with issues concerning the representation and processing of linguistic information at various stages of L2 development (internal factors). Many SLA researchers devote their work to issues concerning communicative interaction, learner attributes, and social factors (mostly external factors).

Studies on *communicative interaction* are concerned with the question of how the “intake” of L2 linguistic information is affected by aspects of the communicative interaction between learners and individuals in their environment. Such studies investigate, for example, conversations between L2 learners and native speakers of the L2, in the case of SLA outside school, or between teachers and peer students, in the case of SLA in a school context (Ellis 2005; Gass 2003; Kasper and Rose 2002; Ranta and Lyster in press). Recent studies investigate how classroom interaction may be affected by the complexity of the learning “tasks” that learners perform in class (Robinson 2001; Skehan and Foster 2001).

Another strand in the SLA literature is concerned with the influence of a range of *learner attributes* on L2 learning and L2 ultimate attainment. The attributes best studied are learners’ age, sex, language attitudes, motivation to learn, personality, and language learning aptitude (Dörnyei 2005). Note that some of these variables, such as learners’ gender, do not change over time, while attributes such as attitude, motivation, aptitude, and working-memory capacity may change over the course of SLA, in part even as the result of SLA.

A final, rather small, strand in the SLA literature is concerned with the *social context* of SLA. Empirical studies in this strand have mainly focused on the social status of the learner’s L1 and L2 (language dominance), the learner’s linguistic environment at home or in the school situation (monolingual, bilingual, trilingual), as well as the difference between *second-language* learning (i.e., in an L2 environment) and *foreign-language* learning (in an L1 environment) (Siegel 2003).

Obviously, the literatures concerning communicative interaction, learner attributes and social contexts are based on the assumption that these factors affect L2 learning. Often, however, there is no detailed information concerning the *mechanism* involved or the *reason* why the factors should affect L2 learning. Note furthermore that cognition comprises more than representation and processing of information. According to some scholars, constructs such as emotion and motivation belong to the realm of cognition too (Gray 1999; Mandler 1999; Pinker 1997; Schumann 1998). Actually, most learner attributes, such as attitudes, motivation, anxiety, and aptitude (including working-memory capacity, intelligence, knowledge of the world, and metalinguistic knowledge) are, directly or indirectly, “cognitive”, i.e. concerned with the representation and processing of information. Furthermore, if communicative interaction and task complexity indeed affect the way learners process and represent L2 information, we need detailed proposals concerning the mechanism involved and how this might be mediated by learner attributes. Finally, there does not seem to be a *direct* link between social context and the representation and processing of L2 information but progress might be made by specifying the facilitating (if not causal) role of social context in the development, speed, and ultimate attainment of SLA.

Conclusion

As Popper (1959) advises us, theory construction and empirical research should first of all be devoted to finding explanations of puzzling phenomena. For the SLA field, this means we should focus on the fundamental issues listed in Section 2 of this paper. Central for an understanding of these issues are the cognitive (linguistic and psychological) and neurophysiological *mechanisms* of language acquisition. If SLA scholars keep this goal in mind, the coherence in the field's literatures (devoted to representation, processing, communicative interaction, learner attributes, social context, and applied matters such as L2 instruction) is likely to increase. It will then be more possible for the SLA field as a whole to demonstrate the scientific and social relevance of its enterprise to both the academic and the non-academic world.

Language knowledge, language use and language acquisition are matters of the mind/brain. There is no language knowledge, use, or acquisition without a brain (and nervous system). Humans can learn language without the capacity to hear or speak, but not without the availability of their brains. Ultimately, language learning is a matter of biology and chemistry, implemented in the brain. To explain why and how the human brain is capable of representing and processing linguistic information, to define and describe the fundamental *mechanisms* of language acquisition in terms of the representation and processing of linguistic cognition, linguists and psychologists have to work together on the mind-side of the mind/brain coin.

The study of SLA in the 21st century faces both threats and challenges. The worst-case scenario would be a divide between the study of the representation and processing of linguistic information (factors internal to cognition), on the one hand, and the study of communicative interaction, learner attributes and social context (external factors), on the other. This is a danger that we must and can avert. The challenge is to make detailed, testable claims concerning the way in which communicative interaction and learner attributes are involved in L2 cognition (i.e. in the representation and processing of L2 information), and to identify the mediating role of social context in SLA. The task is formidable. General theories (Krashen 1981; Spolsky 1989) may be helpful but need to be followed up by detailed proposals that can be empirically tested. For this to happen, it is mandatory that SLA researchers, of whom the majority currently come from a linguistic background, collaborate with researchers in other disciplines.

References

- Allen, J.P.B. and Corder, S.P. (eds.). 1975. *Papers in Applied Linguistics*. [Volume III of the Edinburgh Course in Applied Linguistics]. Oxford: Oxford University Press.
- Brown, R. 1973. *A First Language: The Early Stages*. Cambridge, Mass.: Harvard University Press.
- Carroll, S.E. 2001. *Input and Evidence: The Raw Material of Second Language Acquisition*. Amsterdam and Philadelphia: John Benjamins.
- Carroll, S.E. 2002. "Induction in a modular learner." *Second Language Research* 18: 224–249.
- Chomsky, N. 1957. *Syntactic Structures*. The Hague, Netherlands: Mouton.
- Cook, V. 1991. *Second Language Learning and Language Teaching*. London: Arnold.
- Cook, V. 1993. *Linguistics and Second Language Acquisition*. London: Macmillan.
- Cook, V.J. and Newson, M. 1997. *Chomsky's Universal Grammar: An Introduction*. [Second edition.] Oxford: Blackwell.
- De Bot, K., Lowie, W. and Verspoor, M. 2005. *Second Language Acquisition: An Advanced Resource Book*. London: Routledge.
- DeKeyser, R. 2003. "Implicit and explicit learning". In *The Handbook of Second Language Acquisition*, C.J. Doughty and M.H. Long (eds.), 313–348. Malden, MA: Blackwell.
- Dörnyei, Z. 2005. *The Psychology of the Language Learner*. Mahwah, New Jersey: Erlbaum.
- Doughty, C. and Long, M. (eds). 2003. *The Handbook of Second Language Acquisition*. London: Blackwell.
- Doughty, C. and Williams, J. (eds). 1998. *Focus on Form in Classroom Second Language Acquisition*. Cambridge: Cambridge University Press.
- Ellis, N.C. 2002. "Frequency effects in language processing: A review with implications for theories of implicit and explicit language acquisition". *Studies in Second Language Acquisition* 24: 143–188.
- Ellis, N.C. 2006a. "Language acquisition as rational contingency learning". *Applied Linguistics* 27: 1–24.
- Ellis, N.C. 2006b. "Selective attention and transfer phenomena in L2 acquisition: Contingency, cue competition, salience, interference, overshadowing, blocking, and perceptual learning". *Applied Linguistics* 27: 164–194.
- Ellis, R. 1994. *The Study of Second Language Acquisition*. Oxford: Oxford University Press.
- Ellis, R. 2005. *Planning and Task Performance in a Second Language*. Amsterdam and Philadelphia: John Benjamins.
- Elman, J.L. 1999. "The emergence of language: a conspiracy theory". In *The Emergence of Language*, B. MacWhinney (ed.), 1–28. Mahwah, NJ: Erlbaum.
- Gass, S.M. 2003. "Input and interaction". In *The Handbook of Second Language Acquisition*, C.J. Doughty and M.H. Long (eds), 224–255. Oxford: Blackwell.
- Gass, S.M. and Selinker, L. 2001. *Second Language Acquisition: An Introductory Course*. Mahwah, New Jersey: Erlbaum.
- Gray, P. 1999. *Psychology*. [Third Edition.] New York: Worth.
- Hatch, E.M. (ed.). 1975. *Second Language Acquisition: A Book of Readings*. Rowley, Mass.: Newbury House.
- Hawkins, R. 2001. *Second Language Syntax*. Oxford: Blackwell.
- Hulstijn, J.H.. 2002. "Towards a unified account of the representation, processing and acquisition of second language knowledge". *Second Language Research* 18: 193–223.

- Hulstijn, J.H. 2005. "Theoretical and empirical issues in the study of implicit and explicit second-language learning". *Studies in Second Language Acquisition* 27: 129–140.
- Hulstijn, J.H. 2006. "Psycholinguistic perspectives on second language acquisition". In *International Handbook on English Language Teaching*, J. Cummins and C. Davison (eds), 701–713. Norwell, MA: Springer.
- Hyltenstam, K., & Abrahamsson, N. 2003. "Maturational constraints in SLA." In *The Handbook of Second Language Acquisition*, C.J. Doughty & M.H. Long (eds), 539–599. Malden, MA: Blackwell.
- Jackendoff, R. 2002. *Foundations of Language*. Cambridge, MA: M.I.T. Press.
- Jordan, G. 2004. *Theory Construction in Second Language Acquisition*. Amsterdam and Philadelphia: John Benjamins.
- Kaplan, R. and Bresnan, J. 1982. "Lexical functional grammar: A formal system for grammatical representation". In *The Mental Representation of Grammatical Representations*, J. Bresnan (ed.), 173–281. Cambridge, Mass.: M.I.T. Press.
- Kasper, G. and Rose, K.R. 2002. *Pragmatic Development in a Second Language*. Oxford: Blackwell.
- Kerlinger, F.N. 1979. *Behavioral Research: A Conceptual Approach*. New York: Holt, Rinehart and Winston.
- Klein, W. and Perdue, C. 1997. "The basic variety or: Couldn't natural languages be much simpler?" *Second Language Research* 13, 301–48.
- Krashen, S.D. 1981. *Second Language Acquisition and Second Language Learning*. Oxford: Pergamon Press.
- Larsen-Freeman, D. and Long, M. H. 1991. *An Introduction to Second Language Acquisition Research*. London: Longman.
- Levelt, W. J. M. 1989. *Speaking: From Intention to Articulation*. Cambridge, MA: MIT Press.
- Lightbown, P.M. and Spada, N. 1993 [revised 2nd edition 1999, revised 3rd edition, 2006]. *How Languages are Learned*. New York: Oxford University Press.
- Long, M. H. 2007. *Problems in SLA*. Mahwah, New Jersey: Erlbaum.
- Mackey, A. in press. *Input, Interaction and Corrective Feedback in L2 learning*. Oxford: Oxford University Press.
- MacWhinney, B. 2005. "A unified model of language acquisition". In *Handbook of Bilingualism: Psycholinguistic Approaches*, J.F. Kroll and A.M.B. de Groot (eds), 49–67. Oxford: Oxford University Press.
- Mandler, G. 1999. "Emotion". In *Cognitive Science*, B.M. Bly and D.M. Rummelhart (eds), 367–384. San Diego, CA: Academic Press.
- Miller, G.A. 1954. "The psycholinguists". *Encounter*, 23: 29–37. [Reprinted in G.A. Miller. 1968. *Seven Essays*. Baltimore, Maryland: Penguin Books.]
- Miller, G.A., Galanter, E. and Pribram, K.H. 1960. *Plans and the Structure of Behavior*. New York: Holt, Rinehart and Winston.
- Miller, G.A. and Chomsky, N. 1963. "Finitary models of language users". In *Handbook of Mathematical Psychology* [Vol. 2], D.R. Luce, R.R. Bush, and E. Galanter (eds), 419–492. New York: Wiley.
- Mitchell, R. and Myles, F. 2004. *Second Language Learning Theories*. [Second, revised edition.] London: Arnold.
- Pienemann, M. 1998. *Language Processing and Second Language Development: Processability Theory*. Amsterdam and Philadelphia: Benjamins.

- Pienemann, M. 2003. "Language processing capacity". In *The Handbook of Second Language Acquisition*, C.J. Doughty and M.H. Long (eds), 679–714. Oxford: Blackwell.
- Pinker, S. 1997. *How the Mind Works*. New York: Norton.
- Popper, K.R. 1959. *The Logic of Scientific Discovery*. London: Hutchinson.
- Ranta, L. and Lyster, R. in press. "A cognitive approach to improving immersion students' oral language abilities: The Awareness-Practice-Feedback sequence". In *Practicing for Second Language Use: Perspectives from Applied Linguistics and Cognitive Psychology*, R. DeKeyser (ed.), Cambridge: Cambridge University Press.
- Ritchie, W.C. and Bhatia, T.K. (eds) 1996. *Handbook of Second Language Acquisition*. San Diego: Academic Press.
- Robinson, P. 2001. "Task complexity, cognitive resources, and syllabus design: A triadic framework for examining task influences on SLA". In *Cognition and Second Language Instruction*, P. Robinson (ed.), 287–318. Cambridge: Cambridge University Press.
- Saville-Troike, M. 2005. *Introducing Second Language Acquisition*. Cambridge: Cambridge University Press.
- Schumann, J.H. 1998. "The neurobiology of affect in language". *Language Learning*, 48, Supplement 1.
- Segalowitz, N. 2003. "Automaticity and second languages." In *The Handbook of Second Language Acquisition*, C.J. Doughty & M.H. Long (eds), 382–408. Malden, MA: Blackwell.
- Segalowitz, N. and Hulstijn, J. 2005. "Automaticity in second language learning." In *Handbook of Bilingualism: Psycholinguistic Approaches*, J.F. Kroll and De Groot, A.M.B. (eds), 371–388. New York: Oxford University Press.
- Sharwood Smith, M. 1994. *Second Language Learning: Theoretical Foundations*. London: Longman.
- Sharwood Smith, M. and Truscott, J. 2005. "Stages or continua in second language acquisition: A MOGUL solution". *Applied Linguistics* 26: 219–240.
- Siegel, J. 2003. "Social context". In *The Handbook of Second Language Acquisition*, C.J. Doughty and M.H. Long (eds), 178–223. Oxford: Blackwell.
- Skehan, P. 2002. "Theorising and updating aptitude". In *Individual Differences and Instructed Language Learning*, P. Robinson (ed.), 69–93. Amsterdam and Philadelphia: John Benjamins.
- Skehan, P. and Foster, P. 2001. "Cognition and tasks". In *Cognition and Second Language Instruction*, P. Robinson (ed.), 183–205. Cambridge: Cambridge University Press.
- Spolsky, B. 1989. *Conditions for Second Language Learning*. Oxford: Oxford University Press.
- Tomasello, M. 2003. *Constructing a Language*. Boston, MA: Harvard University Press.
- Towell, R. and Hawkins, R. 1994. *Approaches to Second Language Acquisition*. Clevedon, UK: Multilingual Matters.
- Truscott, J. and Sharwood Smith, M. 2004. "Acquisition by processing: A modular perspective on language development". *Bilingualism: Language and Cognition* 7: 1–20.
- White, L. 2003. *Second Language Acquisition and Universal Grammar*. Cambridge: Cambridge University Press.