The Interface of Psychology and Second Language Acquisition

Zoltán Dörnyei

1 Introduction

When I applied to do a Ph.D. in Second Language Acquisition (SLA) in Hungary in the mid-1980s, it was decided that pursuing this topic could be best done at a Department of Psychology rather than Linguistics. As a result, one September morning I found myself sitting in Professor Csaba Pléh's office in my first academic advisory session, and this meeting marked the beginning of a long and in many ways unusual journey for me. It was unusual partly because after Stephen Pit Corder and his associates established the field of applied linguistics in the mid-1960s, the theoretical study of second/foreign language (L2) learning came to be seen as part of the broader domain of *linguistics*, and there had been very little interaction in this respect with psychological language inquiries. This being the case, assigning Csaba to be my supervisor was an ideal choice, given that he stood out from psychologists in that he was not only interested in language-related issues but had also completed an M.A. in linguistics to further his knowledge in this area.

My journey was unusual also for a second reason. Although at the time of starting my Ph.D. studies Csaba specialised in core psycholinguistic research (e.g. MacWhinney & Pléh, 1988; MacWhinney et al., 1985), he allowed me a great deal of freedom to diverge into other psychological areas that had potential implications for SLA. As a result, I soon found myself examining the psychology of the language *learner* (rather than learning) through adopting a framework that combined individual differences research and social psychology. Studying SLA through a research lens that represented multiple psychological strands turned out to be a fruitful approach, because—as explained further in my 2009 overview of the psychology of SLA (Dörnyei, 2009)—I soon came across a curious and rarely stated fact, namely that

Z. Dörnyei (✉)
University of Nottingham, Nottingham, UK
e-mail: zoltan.dornyei@nottingham.ac.uk

traditional linguistics was not well suited to explaining the processes of L2 development: formal linguistic theories had traditionally focused on the analysis of the *language output*, conceptualised as a static state without a prominent developmental or transitional component, and they conceived language acquisition as a "movement through successive grammars (interlanguages)" (Hulstijn, 2007, p. 785). Accordingly, traditional linguistics had relatively little to say about *how* languages were *learnt*—that is, how Proficiency Level A would develop into Proficiency Level B— beyond describing in great detail the characteristics of the two distinct levels and the differences between them. In contrast, psychology included a number of subfields that had specifically focused on *evolutionary* aspects and *change*, and—what turned out to be a decisive influence on my specific orientation in the mid-1980s—a Canadian group of social psychologists, led by Gardner and Lambert (1959, 1972), had embarked on a pioneering course of merging motivational and social psychology in order to explain the psychological foundation of second language acquisition and intercultural communication.

Thus, I can see in retrospect how fortunate I was to be allowed to start my Ph.D. studies under Csaba's guidance at a time when the disciplinary barriers between the fields of second language acquisition and psychology were about to break down. The current paper is intended to provide an overview of how the interface between the two fields emerged and has gained prominence over the past three decades.

2 The Past: Linguistic Dominance in Second Language Acquisition

The limited suitability of traditional linguistics for exploring the specific developmental processes underlying SLA in the 1980s was closely reflected by SLA textbooks published at the time, as they typically offered some form of a fusion between two sets of rather distinct materials: (a) theoretical analyses of linguistic issues regarding the nature of the learners' limited L2 (often referred to as 'interlanguage') and (b) pedagogical discussions of learning issues. What was largely missing in these texts was a theoretical exposition of the L2 *acquisition* part. This was also mirrored by most M.A. programmes in Applied Linguistics/SLA/TESOL/TEFL in offering a mixture of straight linguistics courses (e.g. phonetics or syntax) that had very little to do with SLA, complemented by highly practical courses (e.g. teaching L2 speaking and listening skills) that had virtually no theoretical linguistic foundation. Despite this mismatch, the field of applied linguistics remained under the dominance of a largely linguistic orientation during the 1990s for at least three reasons:

(a)   A certain amount of linguistic knowledge *is* required for the study—and especially for the teaching—of an L2, and this requisite inevitably shifted the field in a linguistic direction.

(b)   Neither psychology nor education were overly keen to accommodate SLA, thereby leaving (applied) linguistics as the primary discipline for scholars interested in SLA to find a home in.

(c)   Linguistics and (language) psychology have not been effective at 'talking to each other', which hindered cross-fertilisation and cooperation.

In order to understand the roots of the current situation, let us consider these three points in more detail.

2.1   Linguistic Knowledge and SLA

When people learn an L2, particularly in an instructed SLA environment, a certain amount of linguistic knowledge is helpful for this enterprise (e.g. for understanding and internalising grammar). Such knowledge is even more important—and is in fact indispensable—when someone wants to teach the L2 or intends to engage in L2-specific professional activities such as writing coursebooks/L2 materials, preparing L2 tests or designing L2 curricula/syllabi. Indeed, the argument that an L2 expert needs proper linguistics training is intuitively compelling, and it explains to a large extent why SLA came to be seen as part of linguistics. However, if we examine more closely the linguistic knowledge that is required for becoming a successful L2 practitioner of any sort, we find that it is limited largely to rather basic descriptive linguistics—primarily concerned with he description of simple grammatical rules and vocabulary—without touching upon the theoretical depth of the linguistic science. I am aware that this statement may sound controversial and can potentially open Pandora's box, but my own L2-specific career has been witness to the validity of this claim. I have worked in the past as an L2 teacher and teacher trainer (for over 15 years), have been in charge of designing L2 proficiency tests both at local and national levels, and have co-authored two language teaching textbooks. I was able to deliver satisfactory performance in all these areas with rather limited linguistic knowledge, and in fact, what turned out to be far more beneficial for my work was the utilisation of relevant psychological know-how (e.g. concerning motivation, group dynamics and psychometrics).

2.2   SLA's Uneasy Fit Within Psychology and Education

Although SLA has become a strand of (applied) linguistics, we should realise that this was not the only available option, and perhaps not even the most obvious one, given that the study of first language (L1) acquisition had traditionally been part of the field of psychology rather than linguistics. The interest in the learning of one's mother tongue by psychologists was motivated by the recognition that language is not only a communication code but also one of the defining aspects of being human,

and this being the case, it occupies a central position in most human affairs, from the most prosaic to the most profound. In view of this, how can we explain the fact that psychology as a field has not been interested in the acquisition of a second language? There are several possible reasons, but I would suggest that the most important one concerns the fundamental difference between L1 and L2 acquisition in one key aspect, the *universality of success*: while virtually everybody manages to learn their mother tongue at a native-like level, most L2 learners rarely reach as high a level in the target language as they have originally hoped for. Accordingly, while L1 learning failure is extremely uncommon, failure to learn an L2 to a high level of proficiency tends to be the norm in many (especially instructed) L2 learning situations. The attraction of L1 acquisition for psychologists has been the fact that L1 knowledge is a species-wide characteristic that can thus offer lessons about humanity in general, unlike L2 learning, which displays a great deal of individual variation both in the overall degree of attainment and the specific developmental level of various language skills and competencies.

Thus, SLA has been seen by most psychologists as a rather 'noisy'—if not 'messy'—field that required extensive subject-matter knowledge to account for the huge variability in attainment. This variability, however, does not explain a similar reluctance observed amongst educational researchers to address the learning of an L2, because education is by definition concerned with subject-matter-learning that is characterised by varied attainment levels. From an educational perspective, the problem with SLA has been its highly technical character in terms of linguistics, resulting in a specialist 'applied linguistic' terminology that did not sit comfortably with the dominant educational discourse. This divergence was related to the fact that the L2—the target of the language education process—is broader in scope than being merely a set of knowledge and skills that learners need to acquire, and thus its learning is rather different from that of other school subjects such as mathematics or literacy.

2.3   The Compartmentalisation of Linguistics and Psychology

Academic disciplines in general tend to be rather 'tribal' in the sense that various research domains develop their own disciplinary boundaries and specialist networks, as a result of which they tend to ignore findings in other domains even when the latter have obvious overlaps with their own. With regard to linguistics and language psychology, the territorial rigidity has been strengthened by a further division line, namely, that the two fields have traditionally looked at language from a rather different vantage point. As mentioned earlier, linguistics has typically focused on the *output* of the language production process (i.e. people's actual oral and written discourse), without being overly concerned about how this output has been generated. Indeed, the main objective of traditional linguistics has been to provide descriptive rules and patterns of the language system (e.g. 'grammar') without examining whether the proposed theories and principles had any plausibility in terms of their neurobiological

operation. Psychologists, on the other hand, have primarily focused on the *mental processes* and *structures* whereby people understand, produce, remember, store and acquire language, with little concern for the subtle linguistic patterns and regularities that characterise the actual language output that these processes generate.

2.4 Interim Summary

As a consequence of the above factors, even though linguistics may not have been the best fit for understanding SLA, it still appeared to be a more accommodating discipline than psychology and education. Becoming part of linguistics, however, placed the scholarly study of the acquisition of an L2 in a curious 'no man's land' in the sense that linguistics was not properly equipped for addressing the core acquisitional dimension of the field. It is partly because of this partial incompatibility that over the past four decades applied linguistics has persistently (but rather unsuccessfully) tried to distance itself from linguistics by trialling different descriptive labels and academic identities (e.g. second language psychology, L2 psycholinguists, educational linguistics, language education, bilingualism studies), and that applied linguistics programmes throughout the world have often been housed by departments of education or English rather than linguistics. Curiously, however, even this quest for a new professional identity had not brought SLA and psychology closer together until the turn of the millennium, when—almost out of the blue—there was a fundamental shift in perception in applied linguistic circles: psychological approaches started to gain prominence in researching the theoretical foundation of acquiring a second language, with the most fruitful lines of inquiry over the past two decades almost always involving some interdisciplinary element. An analysis of the causes and characteristics of this change brings us to the present state of the field to be discussed next.

3 The Present: The Growing Influence of Psychology

We have seen above that linguistics and psychology have traditionally taken different routes to exploring language, yet applied linguists and psychologists did converge in one specific area: in their interest in the personality/identity of the *language learner*. Studies of individual differences of L2 learners—most notably of aptitude, motivation and learning strategies/self-regulation—became well-established research directions in both fields and produced transferrable results. Indeed, the first major wave of psychological influence on SLA originated in social psychologists' studying language learning motivation in order to promote ethnolinguistic co-existence and reconciliation (e.g. Gardner & Lambert, 1972; for a review, see Dörnyei, 2019). This line of inquiry gradually broadened into covering the whole domain of the psychology of the language learner (e.g. Dörnyei, 2005; Dörnyei &

Ryan, 2015), and thus the study of learner characteristics became the first established strand in the psychology–SLA interface (e.g. Csizér & Magid, 2014; Mercer et al., 2012; Williams & Burden, 1997; Williams et al., 2016).

Although L2 individual difference research constituted an ideal point of entry for psychological expertise into the field of applied linguistics, it was not to become the gateway for the forthcoming large-scale infiltration of psychology, largely because learner characteristics were only indirectly related to the core issue in SLA, the *process of language acquisition.* Thus, while L2 motivation research for example achieved undisputed recognition in the field, it did not reach a mainstream position in the study of SLA. The real push for a dramatic restructuring of the domain came from a different source, *cognitive (neuro)science.* Looking back, this was not entirely unexpected, given that cognitive science had had a long history with theoretical linguistics, as the renowned linguist, Noam Chomsky, was one of the founders of the field of cognitive science (for reviews, see Pléh, 2019; Pléh et al., 2013). Accordingly, Chomsky's theory of language acquisition—and especially his concept of Universal Grammar—had indeed been considered for use as a potential template for furthering the understanding of SLA (see e.g. White, 2014). However, it was soon realised that Universal Grammar could not properly account for the process of language acquisition and that it had particularly limited explanatory power when it came to the learning of an L2.

The decisive push to bring psychology and SLA closer occurred when technological advances in brain scanning and neuroimaging procedures in the late 1980s extended the domain of cognitive science into the hugely successful field of *cognitive neuroscience.* For the first time in human history, scholars were able to look into the 'black box' of the brain by using imaging techniques such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI). The common procedure was to ask participants to perform some language-related task (e.g. word repetition, sentence reading, translation, grammar correction, picture naming, stem completion) while their brain functioning was monitored (for illustrations, see a special issue of *Second Language Research* dedicated to the topic of "Neuroimaging and research into second language acquisition"; Sabourin, 2009). In this way, researchers were given a window into online language processing in the brain, with some techniques such as fMRI providing information about the exact *location* of the neural processes (thereby allowing, for example, the comparison of L1 and L2 functions), while others such as EEG producing data about the *timing* of linguistic operations (e.g. the mechanisms of language processing), accurate to the millisecond.

Creating direct observable links between human mental processes that underlie the language that people produce has proved to be an irresistible attraction for scholars, one which succeeded in overcoming much of the existing paradigmatic resistance. Accordingly, psychology became 'trendy' in SLA circles around the turn of the millennium, with psychological theories often featuring at professional meetings and in research publications. As a result, the field became exposed to a multitude of new psychological technical terms and measurement procedures (e.g. eye tracking, neuroimaging, cross-modal priming), and several hybrid academic orientations emerged that integrated linguistic and psychological expertise (most notably,

cognitive linguistics, psycholinguistics and neurolinguistics; for a recent overview of the history of 'language cognition', see Ellis, 2019). Significantly, this new wave of psychological incursion did not eclipse the traditional psychological focus on the language learner but has in fact amplified it, resulting in a cumulative effect that became hard to ignore.

4 The Future: Challenges and Opportunities

The rapid transformation of the field of SLA has brought about both challenges and opportunities. In this final section I will first present two sources of difficulty that applied linguists are faced with as they try to embrace the fact that the psychological dimension of the discipline is likely to take up an increasingly central position within the study of the learning of an L2. I will then present a research agenda that offers the potential to take forward the field of instructed SLA through the utilisation of skill learning theory and the cooperation of explicit and implicit learning.

4.1 Challenges

The ongoing changes have posed two serious challenges for SLA researchers. The first one concerns the necessity to acquire sufficient psychological expertise in addition to the requisite educational and linguistic knowledge. This is a big ask; for example, my 2009 book on *The Psychology of Second Language Acquisition* only summarises knowledge that is essential for the next generation of SLA professionals, but it is highly doubtful that many language teachers, or even M.A. or Ph.D. students, have made (or will make) the time and effort to engage fully with the kind of content it offers. This problem of requiring interdisciplinary knowledge is admittedly not unique to SLA, and a solution that we find in other fields is to form research teams made up of specialists of different areas. However, the compartmentalisation of linguistics and psychology (discussed earlier) hinders this process, and indeed, there have not been many examples of such interdisciplinary collaboration in the SLA literature.

The second challenge concerns the need for scholars to be sufficiently selective in identifying psychological areas that may be fruitfully integrated into existing SLA research traditions. The difficulty does not only lie in the existence of a vast amount of psychological knowledge to select from, but there is also an additional hurdle, namely, that the popularity of a theory in psychology does not automatically guarantee that it will be a useful addition to the SLA research toolkit. A case in point is that some of the most influential theories in the study of L1 acquisition (e.g. Universal Grammar or usage-based theories) offer only rather limited benefits for the understanding of the learning processes that underly SLA, because their primary focus is on implicit

rather than explicit learning (see below for more details). On the other hand, skill-learning theory (see also below) has proved to be immensely relevant to SLA despite the fact that it was not an obvious choice to start with for the purpose of informing the learning of an L2. Within motivational psychology, goal theories can be used as an illustration of the same point: although they have constituted one of the most frequently applied research paradigms over the past decades, they have made virtually no impact on SLA, largely because in their original study launching the field, Gardner and Lambert (1959) *deviated* from established psychological pathways: they added a social dimension to motivational psychology and consequently introduced in SLA the novel goal concept of 'integrative orientation' (i.e. learning an L2 in order to interact with and even become similar to valued members of that community; for a recent review, see Al-Hoorie & MacIntyre, 2020), which did not lend itself to be studied with a goal-setting or a 'mastery' versus 'performance' goal paradigm.

4.2 A Proposed Research Agenda

The research agenda outlined below offers a concrete approach to making the process of L2 learning/teaching more principled and effective through the integration of the tenets of one of the most powerful psychological learning paradigms, the *explicit* versus *implicit learning* dichotomy (e.g. Rebuschat, 2015) as well as the related contrast of *procedural* versus *declarative knowledge* (e.g. Ullman, 2014). There is general agreement amongst scholars that infants acquire their L1 primarily by means of implicit learning mechanisms, but for some reason, when people try to learn an additional language later in their lives, the implicit learning processor that was used so successfully in one's childhood does not seem to work efficiently, especially if the learning takes place in a school setting. The consistently observed contrast between the largely subconscious and effortless manner of mastering one's mother tongue and the conscious and typically effort-intensive and error-prone process of class-room L2 learning has led to the conclusion that in order to optimise the outcome of SLA, adult L2 learners need to complement the ineffective implicit learning mechanisms by explicit procedures. Ellis (2011) explains that this alteration of processing type is characteristic of human functioning in general when automatic (i.e. implicit) processes falter, because at times like that, people will start paying conscious attention to the behaviour in question in order to compensate for the deficiency. For example, although we normally pay little attention to how we walk, when a child stumbles the natural reaction of any parent is to say, *"Be careful"* and *"Look out where you step"*, and this kind of attention-boosting response is not unlike what happens in second language education.

The problem, however, is that explicit learning procedures cannot replace implicit learning altogether, because communicatively useful L2 proficiency needs to be highly *automatised* and thus stored in some implicit form. Therefore, the key question for instructed SLA in the twenty-first century is how explicit mechanisms can help to generate implicit L2 knowledge in our learners within classroom settings; in

other words, the key theoretical task is to specify the *optimal cooperation* between explicit and implicit learning processes; in DeKeyser and Juffs (2005) words,

> There is now converging evidence from studies in the laboratory, the classroom, and the natural L2 environment that the best way to develop implicit/procedural/ automatized knowledge may not be to try to provide it directly, but instead to foster optimal conditions for its acquisition in the long run, and that means providing an explicit jump start. (p. 442)

A collection of studies edited by DeKeyser (2007) provides a solid foundation for this research direction through highlighting and illustrating the relevance of *skill learning theory* (e.g. Anderson, 2000; DeKeyser, 2014) to the mastery of language skills, as this theory offers systematic handling of the cooperation of declarative (explicit) and procedural (implicit) knowledge by identifying procedures whereby the former will lead to the latter. This has been a useful perspective, because it has paved the way for developing learning opportunities that facilitate the cooperation between implicit and explicit processes. However, in its current form, skill learning theory does not go far enough, as it only identifies three broad stages of the automatization process; in order to utilise the full potential of the approach for SLA, the field would need a more fine-tuned taxonomy of *optimal patterns of explicit-implicit cooperation.* In a first attempt to address this question, Dörnyei (2009) listed six well-established patterns of this kind:

- *Explicit registration of linguistic information allows implicit fine-tuning.* The implicit consolidation, automatization and fine-tuning of linguistic information can only happen once the linguistic input has been explicitly noticed and registered as a language representation (see e.g. Ellis, 2011; Schmidt, 1994). A good example is offered by the commonly observed phenomenon that only after learning a new word will one begin to notice the occurrence of the particular word in everyday language use.
- *Explicit practice creates implicit learning opportunities.* Because implicit learning is an unstoppable information processing mechanism, it will automatically accompany any explicit language practice the learners are engaged in during listening, reading, speaking and writing activities (Hulstijn, 2002). In other words, the language material involved in explicit L2 instruction will also provide food for the implicit language processor.
- *Explicit knowledge channels implicit learning.* Explicit metalinguistic information can have a powerful impact upon the processing of subsequent relevant language input, priming its conscious interpretation (Ellis, 2005). For example, pre-task activities that highlight certain specific L2 points such as the nature of politeness strategies will focus the subsequent implicit processing to automatise the politeness strategies in question.
- *Explicit rote learning can provide material for implicit processing.* Rote learning has been an established learning activity in language education programmes worldwide, and psychological research has shown (e.g. Reber's classic study introducing the concept of implicit learning in 1967) that initially memorised explicit knowledge can give rise to implicit processing and subsequent implicit knowledge. An example of this in language teaching has been the observation

that once students have memorised L2 songs or chants, they will be able to use the linguistic material learnt in these memorised texts creatively.

- *Explicit knowledge fills the gaps of implicit knowledge.* Some language learners, particularly ones with high language aptitude and substantial working-memory capacity, are able to draw on explicit knowledge relatively easily even during spontaneous communication to fill the gaps in their implicit/automatized language knowledge (DeKeyser & Juffs, 2005). That is, when their implicit system is incomplete or impaired, they can recall some learnt knowledge and thus their explicit system can form a compensatory bridge to bypass the damaged or missing areas.
- *Explicit learning increases the overall level of accuracy in implicit knowledge.* It has been a well-established finding that learners who acquire the L2 in ways which do not emphasise metalinguistic awareness (e.g. studying in an L2 immersion school or bilingual school without any particular focus on L2 grammar) will continue to have difficulty with certain linguistic structures that are neither salient nor have any significant communicative value. That is, although these learners will become highly fluent in the L2, their language proficiency will be short of native-like L2 ability in some areas, particularly in terms of accuracy (Ellis, 2008). Providing a certain amount of form-focused instruction has been found to have beneficial effects in this respect (see e.g. Lightbown & Spada, 2006).

These six specific sequences of explicit/implicit cooperation illustrate that it is possible to identify productive patterns for optimal explicit/implicit combinations. Indeed, it may not be an exaggeration to assume that *every* successful language learning task represents some form of a fruitful cooperation between explicit and implicit processes, and this outlines a possible research agenda: by examining best practices in L2 instruction, scholars can document different types of the explicit–implicit interface with the aim of producing a comprehensive taxonomy of the most successful patterns. This would not only offer rich theoretical insights into the interaction of explicit and implicit procedures, but would also have considerable practical implications in terms of facilitating L2 materials writing and curriculum/syllabus design. This is thus one possible way whereby psychological know-how can be applied to revitalise SLA practices.

5   Conclusion

The overall message of this paper has been that applied linguists in the twenty-first century need to come to terms with the fact that the way forward is through embracing the fusion of psychological and linguistic concepts and theories. Csaba Pléh has been a champion of such efforts within the domain of psycholinguistics (e.g. MacWhinney & Pléh, 1988, 1997), and his work has demonstrated that such a turn can be a highly productive research avenue. Although psychology can initially be a daunting discipline for someone whose background training lies within linguistics or education, a journey into exploring psychological research related to language

acquisition can become a hugely rewarding experience. Psychologists by definition concentrate on how humans think, feel and behave, and learning more about these fundamental aspects of human life is bound to offer applicable principles for taking SLA to a new level, thereby creating a viable psychology–linguistics interface.

References

Al-Hoorie, A. H., & MacIntyre, P. D. (Eds.). (2020). *Contemporary language motivation theory: 60 years since Gardner and Lambert (1959)*. Multilingual Matters.

Anderson, J. R. (2000). *Cognitive psychology and its implications* (5th ed.). Worth.

Csizér, K., & Magid, M. (Eds.). (2014). *The impact of self-concept on language learning*. Multilingual Matters.

DeKeyser, R. M. (2014). Skill acquisition theory. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (2nd ed., pp. 94–112). Routledge.

DeKeyser, R. M. (Ed.). (2007). *Practice in second language: Perspectives from applied linguistics and cognitive psychology*. Cambridge University Press.

DeKeyser, R., & Juffs, A. (2005). Cognitive considerations in L2 learning. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 437–454). Lawrence Erlbaum.

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. Lawrence Erlbaum.

Dörnyei, Z. (2009). *The psychology of second language acquisition*. Oxford University Press.

Dörnyei, Z. (2019). From integrative motivation to directed motivational currents: The evolution of the understanding of L2 motivation over three decades. In M. Lamb, K. Csizér, A. Henry, & S. Ryan (Eds.), *The Palgrave handbook of motivation for language learning* (pp. 39–69). Palgrave.

Dörnyei, Z., & Ryan, S. (2015). *The psychology of the language learner revisited*. Routledge.

Ellis, N. C. (2005). At the interface: Dynamic interactions of explicit and implicit language knowledge. *Studies in Second Language Acquisition, 27*, 305–352.

Ellis, N. C. (2008). Usage-based and form-focused language acquisition: The associative learning of constructions, learned-attention, and the limited L2 endstate. In N. C. Ellis & P. Robinson (Eds.), *Handbook of cognitive linguistics and second language acquisition* (pp. 372–405). Routledge.

Ellis, N. C. (2011). Implicit and explicit SLA and their interface. In C. Sanz & R. P. Leow (Eds.), *Implicit and explicit language learning: Conditions, processes, and knowledge in SLA and bilingualism* (pp. 35–48). Georgetown University Press.

Ellis, N. C. (2019). Essentials of a theory of language cognition. *Modern Language Journal, 103*(Supplement 2019), 39–60.

Gardner, R. C., & Lambert, W. E. (1959). Motivational variables in second language acquisition. *Canadian Journal of Psychology, 13*, 266–272.

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second language learning*. Newbury House.

Hulstijn, J. H. (2002). Towards a unified account of the representation, processing and acquisition of second language knowledge. *Second Language Research, 18*(3), 193–223.

Hulstijn, J. H. (2007). Psycholinguistic perspectives on language and its acquisition. In J. Cummins & C. Davison (Eds.), *International handbook of English language teaching* (Vol. 2, pp. 783–795). Springer.

Lightbown, P. M., & Spada, N. (2006). *How languages are learned* (3rd ed.). Oxford University Press.

MacWhinney, B., & Pléh, C. (1988). The processing of restrictive relative clauses in Hungarian. *Cognition, 29*, 95–141.

MacWhinney, B., & Pléh, C. (1997). Double agreement: Role identification in Hungarian. *Language and Cognitive Processes, 12*(1), 67–102.

MacWhinney, B., Pléh, C., & Bates, E. (1985). The development of sentence interpretation in Hungarian. *Cognitive Psychology, 17*, 178–209.

Mercer, S., Ryan, S., & Williams, M. (Eds.). (2012). *Psychology for language learning: Insights from research, theory & practice.* Palgrave MacMillan.

Pléh, C. (2019). The inspirational role of Chomsky in the cognitive turn of psychology. *Acta Linguistica Academica, 66*(3), 397–428.

Pléh, C., Gurova, L., & Ropolyi, L. (Eds.). (2013). *New perspectives on the history of cognitive science.* Akadémia Kiadó.

Reber, A. S. (1967). Implicit learning of artificial grammars. *Journal of Verbal Learning and Verbal Behavior, 5*, 855–863.

Rebuschat, P. (Ed.). (2015). *Implicit and explicit learning of languages*. John Benjamins.

Sabourin, L. (Ed.) (2009). Neuroimaging and research into second language acquisition. Special Issue. *Second Language Research, 25*(1).

Schmidt, R. W. (1994). Implicit learning and the cognitive unconscious: Of artificial grammars and SLA. In N. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 165–209). Academic Press.

Ullman, M. T. (2014). The declarative/procedural model: A neurobiologically motivated theory of first and second language. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (2nd ed., pp. 135–158). Routledge.

White, L. (2014). Linguistic theory, Universal Grammar, and second language acquisition. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (2nd ed., pp. 34–53). Routledge.

Williams, M., & Burden, R. (1997). *Psychology for language teachers.* Cambridge University Press.

Williams, M., Mercer, S., & Ryan, S. (2016). *Exploring psychology for language learning and teaching.* Oxford University Press.