

Implicit and Explicit Learning and Knowledge

142

Aline Godfroid

What types of knowledge do second-language (L2) learners use to communicate fluently? How do different types of instruction affect L2 learners' linguistic knowledge? Do adult learners use different types of linguistic knowledge than children? Questions like these, about linguistic knowledge representations and language learning, pertain to the implicit (unconscious) and explicit (conscious) dimensions of second language acquisition (SLA). Understanding that distinction is fundamental for researchers and practitioners alike as it carries both theoretical and pedagogical implications.

Implicit knowledge is intuitive and tacit knowledge of the structure of a complex system (e.g., the syntactic structure of a language). Because implicit knowledge is key to communicative competence, many researchers agree that the goal of L2 instruction is to develop learners' implicit knowledge. Some, however, would argue that implicit knowledge is hard for adult, instructed learners to attain (DeKeyser, 2015; Leow, 2015; Spada, 2015). A potential alternative is *explicit knowledge*—conscious and verbalizable knowledge—for instance, being able to say or describe that the verb comes at the end in subordinate clauses in Dutch. Using explicit knowledge in speaking or listening is initially slow and effortful, but it can be sped up with practice. Explicit knowledge that can be retrieved fast and relatively effortlessly is referred to as *automatized explicit knowledge*. Automatized explicit knowledge functions similarly to implicit knowledge in communication; this is why it has been proposed as a more realistic and attainable alternative for adult, instructed learners (DeKeyser, 2015; Leow, 2015; Spada, 2015). In spite of the skepticism about the role of implicit knowledge in adult SLA, some researchers have indeed reported evidence for the acquisition of implicit L2 knowledge (Godfroid, 2016; Leung & Williams, 2011, 2012, 2014; Paciorek & Williams,

A. Godfroid (✉)

Second Language Studies and TESOL program, Department of Linguistics, Languages, and Cultures, Michigan State University, East Lansing, MI, USA

e-mail: godfroid@msu.edu

© Springer Nature Switzerland AG 2021

H. Mohebbi and C. Coombe (eds.), *Research Questions in Language Education and Applied Linguistics*, Springer Texts in Education, https://doi.org/10.1007/978-3-030-79143-8_142

823

2015a, 2015b; Rebuschat & Williams, 2012; Williams, 2005; but see Hama & Leow, 2010; Leow & Hama, 2013).

Recent years have seen an increased interest in the learning processes that produce different types of knowledge (i.e., implicit or explicit). Key cognitive learning processes include attention and awareness (Godfroid et al., 2013). With the help of real-time methodologies, which record people's behavior in real time, researchers can tap into L2 learners' cognitive processes as they are happening and use this information to relate it to learning outcomes. *Implicit learning*, then, is a learning process that requires attention to input, but takes place outside of awareness and without intention to learn. *Explicit learning* is a learning process that is conscious and intentional (e.g., learning through forming and testing hypotheses about where the verb is placed in a sentence) and requires both attention and awareness.

A question of current interest is whether learners can simultaneously learn implicitly and explicitly (Bell, 2017). A related question concerns the learning-knowledge or the process-product relationship (Leow, 2015)—that is, to what extent are learning with or without awareness (i.e., explicit or implicit learning) and conscious or unconscious knowledge (i.e., explicit or implicit knowledge) related? In instructed settings, more effort (i.e., more attention, more awareness, a greater depth of processing) often leads to better learning outcomes, but outside the classroom or in purely meaning-focused tasks such as reading a novel, other factors such as input frequency may play a more important role. A question for future research is whether a single set of cognitive learning mechanisms (e.g., statistical learning) can account for the different types of learning observed in different tasks inside and outside the classroom (Andringa & Rebuschat, 2015).

Work on implicit-explicit knowledge and implicit-explicit learning rests on a foundation of valid and reliable measurement. The past two decades have seen an increase in research designed to validate measures of explicit and, especially, implicit knowledge. Currently, there is a broad consensus that oral production affords a relatively pure measure of implicit knowledge. Similarly, the untimed written grammaticality judgment test (GJT) and the metalinguistic knowledge test (e.g., correcting and explaining errors in sentences) are widely regarded as measures of explicit knowledge. The nature of other tasks is contested, specifically the elicited imitation test and the timed written GJT (compare Ellis, 2005; Suzuki and DeKeyser, 2015; and Vafae et al., 2017). As the field reaches a broader consensus on what different linguistic tests measure (for a synthesis, see Godfroid et al., 2018; Godfroid & Kim, 2021), researchers will be equipped to revisit key questions in SLA and L2 instruction. Is explicit instruction really more effective than implicit instruction (Goo et al., 2015; Norris & Ortega, 2001; Spada & Tomita, 2010)? In what kinds of learners, and under what conditions, can explicit knowledge contribute to implicit knowledge—that is, is there an explicit-implicit knowledge interface? Progress in these areas may shed light on the usefulness, or lack thereof, of explicit grammar instruction for training fluent and competent L2 users.

The Research Questions

1. To what extent can late second-language learners acquire implicit knowledge of a second language?
2. To what extent does attention to linguistic form and “noticing” (Schmidt, 1990) facilitate second language acquisition? Do adult second-language learners need to be aware of linguistic forms in the input to acquire them?
3. What is the relationship between linguistic structure and the nature of second-language learning? Are some structures (e.g., easy or difficult structures) better taught explicitly while others can be acquired more readily from input alone?
4. What teaching methods are most conducive to the development of implicit second-language knowledge? Do explicit and implicit teaching methods result in different types of linguistic knowledge?
5. Is explicit instruction more effective than implicit instruction if the frequency of forms in the input is accounted for?
6. Can explicit knowledge (e.g., from grammar instruction) be beneficial for developing implicit knowledge? In other words, under what conditions, and for what kinds of second-language learners, do explicit and implicit knowledge interface?
7. To what extent can adult second-language learners make up for a possible lack of implicit knowledge through practice and automatization of explicit knowledge?
8. What are valid and reliable measures of implicit, automatized explicit, and explicit knowledge?
9. To what extent do individual differences in implicit and explicit learning aptitudes predict the development of implicit and explicit second-language knowledge?
10. To what extent does the learning context (instructed versus naturalistic) influence the type of knowledge that second-language learners acquire?

Suggested Resources

Hulstijn, J. H., & Ellis, R. (Eds.). (2005). Implicit and explicit second-language learning [Special issue]. *Studies in Second Language Acquisition*, 27(2).

With this seminal collection of research articles, Hulstijn and Ellis put the study of implicit and explicit second-language learning on a firm theoretical basis. The issue featured a balanced mix of theoretical and empirical work. Following an introductory article (Hulstijn, 2005), the special issue included a theoretical review of the explicit-implicit knowledge interface (N. Ellis, 2005) and five empirical studies (R. Ellis, 2005; De Jong, 2005; Robinson, 2005; Tokowicz & MacWhinney, 2005; Williams, 2005), many of which have now become classics.

The article by R. Ellis (2005) ("Measuring Implicit and explicit knowledge of a second language: A psychometric study") marked the beginning of the current wave of test validation research, which has advanced our understanding of how researchers and teachers can measure implicit and explicit knowledge. Williams' (2005) study ("Learning without awareness") has been conceptually replicated and extended several times, with varying results. The research design and proposed findings of this study continue to fuel research on the role of awareness in second-language learning.

Ellis, R., Loewen, S., Elder, C., Erlam, R., Philp, J., & Reinders, H. (Eds.). (2009). *Implicit and explicit knowledge in second language learning, testing, and teaching*. Bristol, UK: Multilingual Matters.

This edited volume brings together the output of the Marsden Fund Project, a large-scale research project funded by the New Zealand Royal Society of Arts, which was designed to advance the study of implicit and explicit learning, knowledge, and instruction on multiple fronts. The project had three overarching goals, which are reflected in the structure of the book. Part One presents definitions and R. Ellis' understanding of the issues and relationships between implicit and explicit learning, knowledge, and instruction. Part Two presents the results of the Marsden study proper and includes five proposed measures of implicit and explicit knowledge. In Part Three, the different measures are applied in various ESL/EFL contexts, with the goal of examining the measures' relationship to general language proficiency. Part Four is devoted to form-focused instruction and its effects on implicit and explicit knowledge. The conclusions of the project are presented in Part Five. Given the broad range of topics addressed in this volume, this book will be of interest to a wide range of applied linguistics researchers.

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

This volume represents an update to a 1994 edited volume by Nick Ellis carrying the same title (Ellis, N. (Ed.). (1994). *Implicit and explicit learning of languages*. London: Academic Press.) Both volumes bring together psychologists and SLA researchers around the shared topic of implicit and explicit learning. In this new volume, eighteen author teams discuss the topics of implicit-statistical learning, explicit learning, and second language acquisition from within their disciplinary traditions. Contributions are organized into three parts. Part One presents distinct theoretical perspectives. Different schools of thought are represented from SLA and psychology, as well as from the implicit and statistical learning literatures. Part Two focuses on research design and methodology. It includes introductions to two real-time methodologies, eye tracking (Godfroid & Winke, 2015) and event-related potentials (Morgan-Short, Faretta-Stutenberg, & Bartlett-Hsu, 2015), that can bring new insights to the study of implicit and explicit learning and knowledge. In Part Three, theories of implicit and explicit learning are applied to real-world

instructional contexts. This section includes a meta-analysis that revisits the relative effectiveness of implicit and explicit instruction (Goo et al., 2015). Readers looking for an in-depth, transdisciplinary overview of big questions in implicit and explicit learning will find this volume particularly informative.

Andringa, S., & Rebuschat, P. (Eds.). (2015). New directions in the study of implicit and explicit learning [Special issue]. *Studies in Second Language Acquisition*, 37(2).

This thematic issue on new directions in implicit and explicit learning marked the ten-year anniversary of Hulstijn and Ellis' (2005) seminal publication. A notable development over the intervening decade was the rise in real-time, or online, methodologies for studying implicit and explicit learning. Three empirical studies (Andringa & Curcic, 2015; Cintrón-Valentín & Ellis, 2015; Godfroid, Loewen, Jung, Park, Gass, & Ellis, 2015) utilized eye tracking or eye-movement registration to gain a detailed picture of how second-language learners process input, a fourth study (Morgan-Short, Deng, Brill-Schuetz, Faretta-Stutenberg, Wong, & Wong, 2015) relied on brain imaging (fMRI), and a fifth study (Paciorek & Williams, 2015) implemented a reaction-time methodology. The measurement of awareness is central to a paper by Rebuschat, Hamrick, Riestenberg, Sachs, and Ziegler (2015), which nicely synthesizes the research since Williams' (2005) influential study. Caldwell-Harris, Lancaster, Ladd, Dediu, and Christiansen (2015) demonstrate the potential of implicit-statistical learning for lexical tone, an area that has received comparatively less attention in SLA.

Roehr-Brackin, K. (2018). *Metalinguistic awareness and second language acquisition*. New York: Routledge.

In this volume, Roehr-Brackin discusses metalinguistic awareness, a concept that includes explicit knowledge, from different theoretical vantage points. The author brings together and synthesizes research from child and adult language learning, which have relied on different conceptualizations of metalinguistic awareness. Drawing on the strengths of both paradigms, the author then outlines new avenues for research and calls for more research with under-studied learner populations. Chapter 1 provides definitions of central concepts in the book. Chapters 2 and 3 are devoted to child language learning and relate metalinguistic awareness (viewed here as a gradient property) to literacy development. Chapters 4, 5, and 6 explore metalinguistic awareness as a part of the explicit-implicit knowledge dichotomy. These chapters address key topics in applied linguistics research, including the explicit-implicit knowledge interface, the effects of explicit instruction, language learning aptitude, and the measurement of explicit knowledge. To conclude, in Chap. 7, the author identifies potential areas of cross-fertilization between child language learning and adult SLA.

References

- Andringa, S., & Rebuschat, P. (2015). New directions in the study of implicit and explicit learning: An introduction. *Studies in Second Language Acquisition*, 37, 185–196.
- Bell, P. K. (2017). Explicit and implicit learning: Exploring their simultaneity and immediate effectiveness. *Applied Linguistics*, 38, 297–317.
- DeKeyser, R. (2015). Skill acquisition theory. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (2nd ed., pp. 94–112). Routledge.
- Ellis, R. (2005). Measuring implicit and explicit knowledge of a second language: A psychometric study. *Studies in Second Language Acquisition*, 27, 141–172.
- Godfroid, A. (2016). The effects of implicit instruction on implicit and explicit knowledge development. *Studies in Second Language Acquisition*, 38, 177–215.
- Godfroid, A., Boers, F., & Housen, A. (2013). An eye for words: Gauging the role of attention in incidental L2 vocabulary acquisition by means of eye-tracking. *Studies in Second Language Acquisition*, 35, 483–517.
- Godfroid, A., Kim, K. M., Hui, B., & Isbell, D. (2018). Validating implicit and explicit L2 knowledge measures: A research synthesis. *Paper to the Second Language Research Forum*, Montreal, Canada, October 2018.
- Godfroid, A., & Kim, K. M. (2021). The contributions of implicit-statistical learning aptitude to implicit second-language knowledge. *Studies in Second Language Acquisition*. <https://doi.org/10.1017/S0272263121000085>.
- Goo, J., Granena, G., Yilmaz, Y., & Novella, M. (2015). Implicit and explicit instruction in L2 learning: Norris & Ortega (2000) revisited and updated. In P. Rebuschat (Ed.), *Implicit and explicit learning of languages* (pp. 443–482). John Benjamins.
- Hama, M., & Leow, R. P. (2010). Learning without awareness revisited: Extending Williams (2005). *Studies in Second Language Acquisition*, 32, 465–491.
- Leow, R. P. (2015). *Explicit learning in the L2 classroom: A student-centered approach*. Routledge.
- Leow, R. P., & Hama, M. (2013). Implicit learning in SLA and the issue of internal validity. *Studies in Second Language Acquisition*, 35, 545–557.
- Leung, J. H. C., & Williams, J. N. (2011). The implicit learning of mappings between forms and contextually derived meanings. *Studies in Second Language Acquisition*, 33, 33–55.
- Leung, J. H. C., & Williams, J. N. (2012). Constraints on implicit learning of grammatical form-meaning connections. *Language Learning*, 62, 634–662.
- Leung, J. H. C., & Williams, J. N. (2014). Crosslinguistic differences in implicit language learning. *Studies in Second Language Acquisition*, 36, 733–755.
- Norris, J., & Ortega, L. (2001). Does type of instruction make a difference? Substantive findings from a meta-analytic review. *Language Learning*, 51, 157–213.
- Paciorek, A., & Williams, J. N. (2015). Implicit learning of semantic preferences of verbs. *Studies in Second Language Acquisition*, 37, 359–382.
- Paciorek, A., & Williams, J. N. (2015). Semantic generalization in implicit language learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 41, 989–1002.
- Rebuschat, P., & Williams, J. N. (2012). Implicit and explicit knowledge in second language acquisition. *Applied Psycholinguistics*, 33, 829–856.
- Spada, N. (2015). SLA research and L2 pedagogy: Misapplications and questions of relevance. *Language Teaching*, 48, 69–81.
- Spada, N., & Tomita, Y. (2010). Interactions between type of instruction and type of language feature: A meta-analysis. *Language Learning*, 60, 263–308.

- Suzuki, Y., & DeKeyser, R. (2015). Comparing elicited imitation and word monitoring as measures of implicit knowledge. *Language Learning*, 65, 860–895.
- Vafaei, P., Kachinske, I., & Suzuki, Y. (2017). Validating grammaticality judgment tests: Evidence from two new psycholinguistic measures. *Studies in Second Language Acquisition*, 39, 59–95.
- Williams, J. N. (2005). Learning without awareness. *Studies in Second Language Acquisition*, 27, 269–304.

Aline Godfroid is an Associate Professor of Second Language Studies and TESOL at Michigan State University. Her primary research interests are in second language psycholinguistics, with a special emphasis on the study of implicit and explicit knowledge and learning, and in the teaching and learning of vocabulary, quantitative research methods, and eye-tracking methodology. Her research is situated at the intersection of cognitive psychology and second language acquisition and aims to bring second-language psycholinguistics closer to the realities of actual second language learning and teaching. Aline Godfroid is Co-Director of the Second Language Studies Eye-Tracking Lab. She is the author of “Eye tracking in SLA and bilingualism: A research synthesis and methodological guide” (with Routledge) and the recipient of the 2019 TESOL Award for Distinguished Research.