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Grammar Learning Strategies: Towards a Pedagogical Intervention

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Abstract

Despite undeniable advances in research on language learning strategies in the last several decades, empirical investigations of actions and thoughts that learners engage in to better understand and use grammar structures in different contexts, or grammar learning strategies (GLS), remain scarce. Moreover, there is a paucity of studies examining the effects of pedagogical interventions in this area, both with respect to the use of different types of GLS and the mastery of grammar structures in terms of explicit and implicit (automatized) knowledge. There is also no empirical evidence concerning the mediating role of individual difference (ID) factors in this respect. The paper outlines a study currently in progress that seeks to address all of these gaps. The first part is devoted to a brief overview of key issues related to the definition and classification of GLS as well as a synthesis of available research in this area. This is followed by a description of an intervention-based research project which explores the effects of strategies-based instruction (SBI) targeting GLS by English majors in Poland, also taking into account the moderating impact of selected ID variables. In particular, the methodology of the study is presented and the envisaged contributions of the intervention are considered.

Keywords: *Grammar Learning Strategies, Strategies-based Instruction, Explicit Knowledge, Implicit (Automatized) Knowledge, Individual Differences*

Introduction

The learning of grammar of an additional language often poses a considerable challenge for a few reasons. For one thing, despite widespread beliefs, or what Larsen-Freeman (2003) refers to as myths, the knowledge of grammar cannot be reduced to familiarity with a collection of facts about how target language (TL) structures operate, mastery of a set of rules or the ability to use those rules accurately. As Larsen-Freeman (1997, 2003) argues, such knowledge consists of three interdependent dimensions of *form* (i.e., how a particular structure is constructed), *meaning* (i.e., the semantic aspect of a given structure, including multi-word units) and *use* (i.e., pragmatic considerations and meaning of a specific TL form in context). Similarly to Batstone (1994), she also makes the point that grammar should not be viewed as a static product

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but, rather, as a dynamic process or skill, whereby the three dimensions constantly interact to result in *grammaring*, allowing language learners to use grammar structures accurately, meaningfully and appropriately to precisely signal their intentions and attain their communicative goals (cf. Larsen-Freeman & DeCarrico, 2019). Moreover, while awareness of the three dimensions is crucial in eventually leading to the mastery of grammar, it is insufficient in itself to ensure that second or foreign language (L2) learners will be able to use TL grammar structures in spontaneous, real-time interaction where limited attentional resources need to be directed to multiple tasks (e.g., planning what to say, encoding messages, monitoring, listening to others; cf. Kormos, 2006). This is because there is a crucial distinction between *explicit knowledge*, which is conscious, declarative, and can only be employed when learners have ample time to access pertinent rules, and *implicit knowledge*, which is tacit, procedural and available for use in automatic processing, thus enabling real-life interactions that underpin everyday communication (cf. DeKeyser, 2007, 2017; Ellis, 2009; Pawlak, 2019a, 2021a). In other words, students who are cognizant of how a particular structure is constructed, what it means and for what purposes it can be used may not be able to use in the right way in conversation, which is an exemplification of the *inert knowledge problem* (Larsen-Freeman, 2003). Things are further complicated by the fact that many learners in foreign language contexts start learning an additional language after the critical period, their out-of-class exposure to this language is typically limited and somewhat by default they are provided with explicit instruction which focuses on rules that are likely to be remembered even when they achieve high levels of TL proficiency. In such situations, it might not make sense to talk about the development of implicit knowledge and opt instead for the concept of *highly automatized explicit knowledge*, which allows effective L2 performance under time pressure (DeKeyser, 2017; DeKeyser & Koeth, 2011; Suzuki & DeKeyser, 2017).

One way to help L2 learners to successfully grapple with these challenges is obviously the provision of effective grammar instruction (GI) which can come under many guises, ranging widely in the level of explicitness, intensity, selection of the targeted grammar features to be taught or its place in the curriculum (e.g., Loewen, 2020; Nassaji & Fotos, 2011; Pawlak, 2021b). While such instructional options are theoretically grounded and there is copious empirical evidence that GI is effective for the short- and long-term development of explicit and implicit knowledge (Nassaji, 2017), the findings of such research have thus far only marginally affected everyday classroom practices, not least because some of the new solutions proposed by scholars may not be feasible in many educational contexts (cf. Larsen-Freeman, 2015; Pawlak, 2021c). Even more importantly, the effects of grammar teaching are bound to be mediated by an array of individual difference (ID) factors (e.g., aptitude, working memory, beliefs, motivation, learning styles, learning strategies, emotions) or their combinations, which cannot be effectively catered to in most classrooms due to time constraints, large student groups, inadequate teacher training or the need to meet externally imposed requirements. This basically means that, without denying the crucial role of teachers, success in learning L2 grammar hinges to a large extent on whether learners can and are willing to exercise autonomy in learning this TL subsystem (Pawlak, 2016). The main manifestation of such an agentic, autonomous and self-directed approach is adept application grammar learning strategies (GLS), which are employed with a view to self-regulating the process of learning grammar (Oxford, 2017; Pawlak, 2018). If such strategies are to be effectively used, however, some form of strategies-

based instruction (SBI) may be indispensable, all the more so that the strategic devices learners fall back upon may often be a reflection of how grammar is typically taught and tested in a specific context. Given such realities, it surely comes as a surprise that there are almost no studies that would have investigated the effect of SBI focused on GLS. In response to this gap in existing research, a study is currently in progress which has been designed to examine the effects of a pedagogical intervention in GLS use among English majors in Poland. The present paper describes the goals and methodology of this research project as well as outlining the envisaged benefits of SBI in strategies for learning grammar. Before this is done, however, the definitions and classifications of GLS will briefly be discussed and the main lines of inquiry in this area will be synthesized.

Definitions and Classifications of GLS

Not surprisingly, the definitions of strategies for learning grammar have evolved together with changes in how language learning strategies (LLS) were conceptualized (e.g., Pawlak, 2021d, for an overview). To the best knowledge of the present author, the very first attempt to define GLS as a distinct category of LLS was made by Oxford, Lee and Park (2007). Adopting as a point of reference the definition of strategies introduced by Oxford (1990), they characterized strategies for learning grammar as “actions and thoughts that learners consciously employ to make language learning and/or language use easier, more effective, more efficient, and more enjoyable” (Oxford et al., 2007, p. 117). Three years later, Cohen and Pinilla-Herrera (2010) proposed a slightly different definition, describing GLS as “deliberate thoughts and actions that students consciously [employ] for learning and getting better control over the use of grammar structures” (p. 64). More recently, drawing among others on the claims of complex dynamic systems theories (CDST; Larsen-Freeman & Cameron, 2008), Oxford (2017) came up with a comprehensive definition of GLS as “(...) teachable, dynamic thoughts and behaviors that learners consciously select and employ in specific contexts to improve their self-regulated autonomous L2 grammar development for effective task performance and long-term proficiency” (p. 244). Despite the undeniable strengths of this characterization of GLS, which surely does justice to all the crucial features of this construct, the research project described later in this paper was guided by the definition by Cohen and Pinilla-Herrera (2010). The reason for this decision was the fact that by referring to “learning and getting better control over the use of grammar structures”, these scholars managed to forge a link between GLS use and the development of explicit and implicit (highly automatized) knowledge of TL grammar, which, as will be shown later, is of pivotal significance to the study being currently under way. More specifically, their definition emphasizes that appropriate use of GLS can have two beneficial outcomes: (1) it can assist learners in figuring out and remembering requisite rules, thus contributing to explicit knowledge and, at the same time, (2) it can also help learners to employ grammar features accurately, meaningfully and appropriately in interactions under time pressure, thereby fostering the development of a parallel implicit representation or, alternatively, enabling automatization of existing explicit knowledge (cf. DeKeyser, 2017; Ellis, 2009; Pawlak, 2021a).

In view of the fact, as will be demonstrated below, empirical investigations into GLS are scarce, it is not surprising that attempts to come up with comprehensive classifications of GLS have been few and far between. In fact, as will be shown in the overview of available research,

many of the studies have taken the shortcut of relying on generic, extremely influential, divisions of GLS, such as those proposed by O'Malley and Chamot (1990) or Oxford (1990), introducing necessary changes to popular data-collection instruments, such as the SILL (Oxford, 1990). Such a solution, however, appears to be clearly untenable as it does not do justice to the complex processes involved in learning L2 grammar and it does not allow really capturing them. Therefore, there is a need to come up with domain-specific classifications that would offer insights into the actions and thoughts learners embark on to figure out how L2 grammar works and later use grammatical structures in different contexts and situations. One possible approach to categorizing GLS is to focus on strategies in a specific additional language, a good case in point being the website containing strategic devices that can be used for learning Spanish grammar constructed by Cohen and Pinilla-Herrera (2010). The other, which has been prevalent and is also adopted in the research project described later in this paper, is to come up with a general classification of GLS that would be applicable to a range of TLs.

The first attempt to identify broader categories of GLS was made by Oxford et al. (2007), who adopted as a point of departure four modes of teaching grammar emerging from research into form-focused instruction (e.g., Doughty & Williams, 1998; Ellis, 2005). This approach led them to identify four types of strategies that learners can deploy when studying grammar: (1) *implicit learning*, which is entirely focused on meaning and message conveyance, (2) *implicit learning including a focus on form* (i.e., shifting learners' attention to a grammar feature in communication-based tasks, as might happen with different types of corrective feedback on learners' utterances constructed under time pressure; cf. Nassaji & Fotos, 2011), (3) *explicit inductive learning* (i.e., involving learners' own efforts to discover grammar rules), and (4) *explicit deductive learning* (i.e., based on the provision of rules by the teacher, coursebook or other resources). This descriptive scheme was clearly invaluable since it illuminated the importance of strategic grammar learning and provided an impulse for subsequent research endeavors in this area. This said, this initial classification also suffered from a number of weaknesses, such as its insufficient focus on GLS involved in controlled and communicative practice that constitutes part and parcel of learning L2 grammar or failure to go beyond what could be described as cognitive strategies and focus on other types of strategic devices that are instrumental in this process (e.g., metacognitive strategies such as planning or monitoring the ways in which grammar structures are learned) (cf. Pawlak, 2009, 2012a, 2012b, 2013).

Addressing some of these shortfalls, Pawlak (2013, 2018) developed what remains to date the only comprehensive classification of GLS, which takes into consideration the uniqueness of learning this TL subsystem and in particular recognizes the vital distinction between explicit and implicit (highly automatized) knowledge of grammar structures. The classification was constructed drawing on the categorization of LLS proposed by Cohen (2010), which was an attempt to reconcile the leading earlier classifications of O'Malley and Chamot (1990), and Oxford (1990), the division of instructional options that can be employed in teaching grammar that was proposed by Ellis (1997) and amended by Pawlak (2006), as well as the findings of empirical investigations into GLS conducted to date. Pawlak's (2013, 2018) classification includes the following categories and subcategories:

- 1) *metacognitive GLS*, which are applied to plan, supervise and evaluate learning grammar (e.g., having specific goals and objectives in learning grammar, knowing one's strengths and weaknesses with respect to learning this TL subsystem);
- 2) *cognitive GLS*, which lie at the heart of the classification since they are directly concerned with learning and subsequently using grammar structures in different contexts; such strategies are further subdivided into four groups:
 - a) *GLS employed to deal with focus on form*, or such that facilitate the production and comprehension of grammar structures in communication-based tasks (e.g., comparing one's own output with that of more proficient TL users; trying to use specific grammar features in communication);
 - b) *GLS used to aid the development of explicit knowledge of grammar*, whether this takes place through *deduction* (e.g., memorizing rules about specific grammar structures; remembering information related to grammar by location on a page) or *induction* (e.g., using electronic resources to figure out rules; discovering grammar rules by analyzing examples);
 - c) *GLS used to aid the development of implicit (highly automatized) knowledge of grammar*; such strategies can be beneficial to learners when they engage in different types of practice, whether this practice is *controlled* (e.g., using grammar rules in exercises, such as paraphrasing, gap-filling or translation) or *communicative* (e.g., trying to use prefabricated patterns containing a specific grammar structure in one's TL production), and whether it requires *production* (e.g., deliberately using grammar forms in speaking and writing) or *comprehension* (e.g., reading and listening to texts including multiple instances of a grammar feature);
 - d) *GLS used to process corrective feedback on errors made when producing grammar structures in different contexts* (e.g., trying to notice and self-correct grammar errors; listening carefully for feedback provided by the teacher with respect to the use of grammar);
- 3) *affective GLS*, which are applied to self-regulate the emotional dimension of learning L2 grammar (e.g., talking to other people about one's feeling manifested when learning grammar; trying to relax when encountering problems with understanding or using grammar);
- 4) *social GLS*, which involve different forms of cooperating with others (e.g., asking the teacher or more proficient learners for help with grammar structures; practicing grammar structures with other students).

An undeniable merit of this classification is that it takes into account the diverse processes involved in learning L2 grammar and it also recognizes that strategic learning of this TL subsystem can contribute to the development of both explicit and implicit knowledge, as well as subsequent automatization of the former. With respect to weaknesses, the categorization does not include communication GLS that could play a compensatory role when learners are not familiar with a specific grammar feature, it was intended for Polish university students in degree programs in English, who constitute a highly distinctive group of L2 learners, and it has been validated in just a handful of educational contexts outside Poland (cf. Pawlak, 2020).

The classification provided a basis for the development of a research instrument for tapping into GLS use, which is called the *Grammar Learning Strategy Inventory* (GLSI; Pawlak, 2013, 2018). The questionnaire consists of 70 5-point Likert-scale statements (1 – *it does not apply to me at all* and 5 – *it perfectly describes my actions and thoughts*), which are divided into categories and subcategories presented above. The validity and reliability of the GLSI were initially established with English majors in Poland (Pawlak, 2018) and the tool has also been used in a number of studies, some of which have already been published while others are under review or are still in progress. The instrument is also one of the data collection instruments utilized in the research project described later in this paper.

Overview of Existing Research into GLS

Even though strategies for learning grammar were identified in the so-called good language learner studies (e.g., Rubin, 1975) and were also reported in empirical investigations of overall repertoires of strategic devices that students draw upon to make L2 learning more effective (e.g., Drożdżał-Szelest, 1997; O'Malley et al., 1985), for several decades they were not examined in their own right, perhaps because of the focus on the strong variant of the communicative language teaching, inspired, among others, by Krashen's (1981) monitor model. The situation changed in the first decade of the new millennium when a number of investigations started to be conducted in various educational contexts, especially Poland. Mirroring the trends in research into ID factors in SLA, studies of GLS can embrace a *macro-perspective*, where the main goal is to identify general patterns drawing on data collected from large numbers of participants by means of meticulously designed and validated tools, and analyzed with the help of sometimes advanced statistical procedures, although qualitative research can also be undertaken with this goal in mind. Alternatively, the study of GLS may adopt a *micro-perspective*, in which case emphasis is placed on the employment of such strategies during various types of learning tasks and although the samples are small, this is compensated for by reliance on multiple data collection instruments. It is also possible to undertake *intervention-based studies* gauging the effects of SBI in GLS use, such as the research project outlined in the following section (cf. Pawlak & Kruk, 2022).

The bulk of empirical investigations into GLS have adopted the macro-perspective. In the Turkish context, Sariçoban (2005) explored the use of GLS by 100 university-level learners of English as a foreign language using a questionnaire constructed on the basis of O'Malley and Chamot's (1990) classification of LLS, finding that the participants most often reported reliance on cognitive GLS whereas metacognitive and socio-affective strategies were less frequently used. In the same context, Gürata (2005) collected data on GLS from 176 English learners in a preparatory program by means of an instrument that drew upon the taxonomies of LLS proposed by O'Malley and Chamot (1990), and Oxford (1990). As was the case in the study by Sariçoban (2005), cognitive strategies were employed most frequently, followed by metacognitive and socio-affective strategies. In a mixed-methods study, Kemp (2007) explored the use of GLS among 144 multilingual learners, who knew between two and twelve languages, using a questionnaire that included 40-Likert-scale statements as well as open-ended queries. The main finding was that the more L2s the participants knew, the more likely they were to resort more frequently to a greater variety of GLS.

Several studies seeking to determine how L2 learners, in particular relatively advanced ones such as English majors, tend to use GLS have been conducted in Poland. For example, a qualitative study carried out by Pawlak (2008) showed that the 29 participants who kept diaries for an entire semester mostly relied on quite traditional, cognitive strategies involving different types of formal practice, which reflected to a large extent the ways in which grammar was taught and tested. Pawlak (2012a) reported similar findings in a study in which the data were gathered from 142 English majors with the help of a questionnaire comprising 36 Likert-scale items that was developed taking as a point of reference the descriptive scheme proposed by Oxford et al. (2007) as well as open-ended queries. The picture that emerged was far from straightforward because, while quantitative analysis indicated most frequent use of GLS facilitating focus on form, qualitative analysis demonstrated that it was, yet again, traditional, cognitive strategies that were predominant. In another empirical investigation, Wach (2016) examined the strategies used in learning grammar in a second (i.e., English) and third (L3, i.e., Russian) language by 85 Polish university students, but her focus was confined to GLS that were based on the participants' first language. She found significant differences in this respect between the two additional languages, which she attributed to proficiency level and psychotypology, or the way in which similarities and differences between languages are perceived by learners.

There are also several studies that have sought to relate the use of GLS to L2 achievement as well as ID factors, although existing empirical evidence in this area is admittedly scarce. As regards the link between strategies for learning grammar and attainment, Tilfarlioğlu (2005) failed to find significant differences in this respect when she administered a modified version of the SILL (Oxford, 1990) to 425 Turkish learners at the university level and compared the responses of successful and unsuccessful participants. The findings were more complex in a study by Pawlak (2009), which drew on data collected from 142 English majors in Poland by means of a questionnaire based on Oxford et al.'s (2007), end-of-semester grades in a grammar class and final examination scores. Although the relationship between GLS use and measures of attainment was very weak, a positive correlation was uncovered between grammar strategies employed in explicit deductive learning and final course grades, with the caveat that it accounted for merely 5% of the variance. More recently, Pawlak (2021b) examined the way in which reported use of GLS, tapped into by means of the GLSI, moderated the mastery of the English passive voice, established on the basis of measures of productive and receptive dimensions of explicit and implicit (highly automatized) knowledge. Regression analysis of the data obtained from 193 English majors in Poland indicated a very limited mediating role of different categories of GLS, with only cognitive strategies aiding the use of grammar structures in spontaneous interaction having a beneficial effect on the productive use of the targeted feature. These findings were corroborated to some extent in a comparative study by Pawlak and Csízér (2023), where the data were collected through the GLSI from 205 Hungarian and 173 Polish university students majoring in English, while attainment was operationalized as self-assessment of TL proficiency. In this case, GLS use, especially in the case of strategies facilitating the production and comprehension of grammar in communicative interactions, explained 13%-15% of variance in achievement. To the best knowledge of the present author, the only large-scale study carried out to date that has sought to relate GLS use to other ID variables was conducted by Zarrinabadi, Rezazadeh and Chehrazai (2023). Path analysis of the

data from 320 intermediate Iranian learners of English as an L2 and L3 showed that language mindsets were significant predictors of grammar strategy use as well as grammar scores, irrespective of the status of English as an additional language (L2 or L3).

There is just a handful of studies that have investigated GLS from a micro-perspective, showing how their use is moderated by different individual and contextual factors when different learning tasks are performed. Pawlak (2012c) looked into the use of GLS by 40 English majors in Poland after the completion of a focused communication task necessitating reliance on the English passive. Analysis of the data collected by means of selected items from the GLSI, immediate reports and audio-recordings of the interactions demonstrated frequent reliance on metacognitive and cognitive strategies, as well as, not surprisingly, a preponderance of GLS involved in focus on form. In another study adopting the micro-perspective, Comajoan (2019) investigated GLS use by 13 learners of L3 Catalan focusing on the acquisition of tense-aspect morphology. The analysis of think-aloud data collected when participants were selecting specific targeted forms in a short past-tense narrative revealed that translation, aspect, adverbial, and tense strategies were applied most frequently, but also that reliance on such strategies depended on specific tense-aspect forms as well as accuracy of use. Finally, Hassanzadeh and Ranjbar (2022) explored GLS use by 13 Iranian students in the performance of a consciousness-raising task, taking into account the forethought, performance and self-reflection stages from the model of self-regulation proposed by Zimmerman (2002). Analysis of the data collected by means of simulated-recall and semi-structured interviews yielded valuable insights into strategies applied during the three phases as well as interactions between them.

Somewhat in contrast to the field of LLS research in its entirety, empirical studies exploring the effects of SBI focused on GLS are few and far between (cf. Plonsky, 2019), which is disconcerting since it can reasonably be assumed that it is this kind of research that may be of greatest relevance to L2 teachers and encourage them to embark on pedagogical interventions targeting strategies that their learners can draw upon when learning and using grammar. One relevant study was carried out by Trendak (2015), who explored the effects of instruction focusing on cognitive and memory strategies employed by 40 Polish learners of English as a foreign language in junior and senior high school as well as university, in learning grammar constructions needed for expressing emphasis in the TL. Participants were divided into two groups and the SBI took the form of awareness-raising activities spanning the period of six weeks. The data were collected by means of the SILL before and after the pedagogic intervention, pretests, immediate and delayed posttests tapping into explicit knowledge of the targeted structure, diaries and other questionnaires. The pedagogic intervention contributed to more accurate use of English emphasis both immediately and in the long run, with the participants in the memory group outperforming those in the cognitive group. While these results bode well for the effectiveness of SBI targeting GLS, the study suffers from some limitations such as a focus on just one grammar feature, which may not be perceived as useful by learners, the failure to measure implicit (highly automatized) knowledge, reliance on the SILL which is not intended to provide information about GLS use, as well as the nature of the pedagogic intervention (Cohen et al., 2023). Given the evident paucity of studies of SBI in the realm of GLS as well as their questionable quality, the research project described below constitutes an attempt to rectify the situation and to address the existing gap.

The Research Project in Progress

The large-scale, complex research project outlined in this section is currently being conducted at three institutions of higher education in Poland and it aims to involve 200 Polish university students majoring in English in year 1 and year 2 of a three-year BA program, with the caveat that this number is likely to change (decrease) over time due to the longitudinal nature of the study. These students are in need of SBI in GLS since the level of mastery of TL grammar in this group has been dropping owing to the nature of final examinations in high school, admission procedures and the need to adjust instruction accordingly. Another group of participants are 12 teachers in the BA program responsible for running a grammar course that is an integral component of the module focusing on teaching English as a foreign language. Since data collection is currently in progress and some stages of the study have yet to be implemented, the following subsections offer a brief description of the aims and methodology of the study without reporting any specific, even very preliminary, findings.

Aims and Research Questions

The main objective of the research project is to determine the effectiveness of instruction in the use of GLS with respect to the development of explicit and implicit (highly automatized) knowledge of three TL grammar structures. These structures include conditionals, (e.g., *He would have stayed at home if he had known the truth*) modal verbs (e.g., *She must have been in Paris that day because I saw her*) and stylistic inversion in English (e.g., *Never has she seen such an amazing place*), which can be considered as difficult to master in terms of both explicit knowledge and implicit (highly automatized) knowledge (cf. DeKeyser, 2005; Ellis, 2006, 2008). They are also highly differentiated (e.g., different tenses and aspects), which ensures that although English majors are bound to be partly familiar with them, there will be sufficient room for improvement as a result of instruction in GLS. The effectiveness of the intervention is operationalized as: (1) the frequency of GLS use and quality of this use, (2) the mastery of the selected grammar structures with respect to explicit and implicit (highly automatized) knowledge, and (3) the level of autonomy of the students with respect to learning grammar (Pawlak, 2016). Another objective is to determine the degree to which the effects of the intervention are mediated by ID factors, including beliefs about grammar instruction, learning styles, motivation, grit, curiosity, enjoyment and engagement. The study seeks to address the following research questions:

RQ1: What are the effects of instruction targeting GLS on the frequency of use of these strategies, awareness of this use and the ways in which such strategic devices are applied, both from a macro-perspective (i.e., general patterns within the sample) and a micro-perspective (i.e., during the completion of specific learning tasks)?

RQ2: What are the effects of instruction targeting GLS on the mastery of three grammar structures, that is, conditionals, modal verbs and stylistic inversion in English, with respect to explicit and implicit (highly automatized) knowledge of these structures?

RQ3: What are the effects of SBI targeting GLS on the students' level of autonomy in learning English grammar?

RQ4: What are the students' perceptions concerning the usefulness of GLS instruction and to what extent are they engaged in this instruction?

RQ5: What are the teachers' perceptions concerning the usefulness of GLS instruction?

RQ6: How are the effects of the intervention with respect to explicit and implicit (highly automatized) knowledge mediated by ID factors (i.e., beliefs about grammar instruction, learning styles, motivation, grit, curiosity, enjoyment and engagement)?

RQ7: What student profiles as GLS users can be distinguished, based on the effects of the intervention on explicit and implicit (highly automatized) knowledge and the ID factors under investigation?

Design of the Study

The study is planned to span two academic semesters, each with a new group of students in order to maximize the amount of data and to minimize the risk of participants' attrition. Table 1 presents the outline of the research procedures concerning one of these semesters. Participants are divided into an experimental and control cohort, each of which is composed of several intact groups that were formed in each of the institutions at the start of the BA program. As can be seen from the table, in Week 1, participants in both cohorts are requested to fill out online questionnaires concerning the ID factors investigated in the study (see below), whereas in Week 2, they take the pretest consisting of measures of explicit and implicit (highly automatized) knowledge of the three targeted structures, accompanied by post-task questionnaires as well as the GLSI and a survey tapping into the level of their autonomy in learning grammar. During that time, teachers are trained to provide SBI in GLS. Weeks 3-12 are dedicated to a total of ten SBI sessions in the experimental cohort, with students being asked to fill out post-intervention questionnaires and keep learning journals throughout that time. The participants in the control cohort do not benefit from SBI and are supplied with what could be described as "regular" grammar instruction (i.e., they follow the syllabus intended for a specific course, such as grammar or integrated skills). Immediate posttests are conducted in both cohorts in Weeks 10-12 while delayed posttests are administered roughly three months later at the beginning of the next semester. Importantly, both immediate and delayed posttests contain the same tasks as the pretests but the verbs and contexts are somewhat different. Prior to data collection, the goals of the study are explained to the students in both cohorts, they are asked to sign consent forms and are informed that they can withdraw from the research project at any time.

Table 1
Overall Outline of the Research Project

Week	Cohort 1 (experimental group)	Cohort 2 (control group)
1	Consent forms. Questionnaires on beliefs, learning styles, motivation, grit, curiosity, enjoyment and engagement. Teacher training.	Consent forms. Questionnaires on beliefs, learning styles, motivation, grit, curiosity, enjoyment and engagement.
2	Measures of explicit and implicit (highly automatized) knowledge. Measures of GLS use and autonomy. Post-task questionnaires. Teacher training.	Measures of explicit and implicit (highly automatized) knowledge. Measures of GLS use and autonomy. Post-task questionnaires.
3-12	GLS instruction, learning journals, engagement grids.	Regular instruction.
13	Measures of explicit and implicit (highly automatized) knowledge. Measures of GLS use and autonomy. Post-task questionnaires. Questionnaire for teachers.	Measures of explicit and implicit (highly automatized) knowledge. Measures of GLS use and autonomy. Post-task questionnaires.
2-3 of new semester	Measures of explicit and implicit (highly automatized) knowledge. Measures of GLS use and autonomy. Post-task questionnaires.	Measures of explicit and implicit (highly automatized) knowledge. Measures of GLS use and autonomy. Post-task questionnaires.

Pedagogical Intervention

SBI undertaken in the experimental cohort spans the period of 10 weeks and takes the form of ten sessions, each about 30 minutes in length, incorporated into EFL classes focusing on grammar and the development of integrated skills. Both the number of instructional segments and their duration have been decided in recognition of the fact that some of the grammar and integrated skills classes in the fifteen-week-long program of study planned for semester may be canceled and that the lecturers will understandably be concerned with the need to cover the structures or other points included in the syllabus, with the effect that they may not be able to devote more time to the intervention. While the SBI is intended to target a variety of grammar strategies to some extent, the main focus is on different types of GLS falling into the cognitive category, in particular those related to using grammar structures in communication, the development of explicit and implicit (highly automatized) knowledge, and response to corrective feedback, as well as the metacognitive category. SBI in these areas draws upon a variation of the Cognitive Academic Language Learning Approach (Chamot, 2005), which comprises six stages: (1) preparation (i.e., identification of GLS students use in familiar tasks), (2) presentation (i.e., modeling and explaining new GLS that are unknown to the students), (3) practice (i.e., opportunities to use new GLS, with teacher support gradually being withdrawn), (4) self-evaluation (i.e., self-assessment of GLS use immediately after the practice phase), (5) expansion (i.e., transferring strategies to new activities, combining strategies into clusters, as well as developing one's own repertoire of preferred strategies), and (6) assessment (i.e., teacher evaluation of the use of GLS and their influence on performance). In addition, the principles of SBI focusing on GLS among English majors, outlined by Pawlak (2019b), are for the most part adhered to. Although the effects of the intervention are only considered with respect to the three targeted structures (i.e., conditionals, modal verbs and stylistic inversion), instructional materials also involve other grammar features in accordance with the belief that the SBI should result in the transfer of the GLS taught to novel contexts.

Due to limitations of space, it is not feasible to provide here a detailed description of all ten sessions in which SBI is implemented. For the sake of illustration, however, it makes sense to outline one such segment. In Intervention Session 1, the focus is for the most part on metacognitive strategies involved in planning, monitoring and self-evaluating the process of learning TL grammar. Accordingly, participants are first provided with some statements about ways of learning grammar, choose three with which they agree the most and then discuss their choices with other students. In the next step, working in pairs and small groups, students first talk about their favorite ways of learning grammar, they are provided with a list of GLS, and then select those that they find the most useful. Finally, they are requested to make a list of their strong and weak points with respect to English grammar, come up with specific goals in this area that they would like to attain by the end of the academic year, and then share their challenges and plans with other students in the whole group.

Data Collection

The requisite data will be collected by means of a number of research instruments, some of which are adaptations of existing questionnaires and inventories, while others have been specifically designed for the purpose of the research project. In view of the proficiency level of the participants, English will be used in all the data collection tools. The instruments are briefly described below:

Quantity and quality of GLS as well as perceptions of SBI

- a) the *GLSI* which was designed based on the classification of GLS that was introduced by Pawlak (2013, 2018; see above); the application of the instrument will make it possible to track changes in the frequency (quantity) of GLS use, thus embracing the macro-perspective;
- b) *questionnaires* filled out immediately after the completion of the tasks aimed to tap into explicit and implicit (highly automatized) knowledge of the grammar structures being the focus of the empirical investigation (see below); they comprise open-ended items, where participants are requested to report strategies that they used when completing a given task and explain whether the GLS varied depending on the nature of this task; this tool allows the adoption of a micro-perspective, thus offering insights into the effectiveness of GLS, taking into account the nature of the task in hand;
- c) *learning journals* kept by the participants throughout the intervention; the students are guided by a number of prompts, some of which were used by Pawlak (2008), and concern, among other things, the goals in learning English grammar, GLS employed for this purpose, the use of new technologies, strategies implemented to use grammar features in communication, planning and self-evaluation, the utility of SBI and the degree of involvement with activities included in the intervention; the tool provides data on the types of GLS employed and their utility, both from a macro- and micro-perspective, as well as offering insights into the reception of GLS instruction, its efficacy and participants' engagement with it.
- d) *questionnaires for teachers*, completed by teachers after the end of the intervention; they contain open-ended items intended to provide insights into teachers'

perceptions of the SBI, in particular with respect to its usefulness, contribution to learning grammar and the challenges involved.

Mastery of the targeted grammar structures (i.e., conditionals, modal verbs and stylistic inversion):

- a) *oral elicited imitation test*, focusing on the three targeted structures but also containing distractors; this test requires participants to listen to a set of sentences containing a grammar feature, decide whether they are true or not and repeat the original sentence (e.g., Spada et al., 2015); students audio-record their oral performance using smartphones; a fixed total score is set and partial scoring is employed; this test allows assessment of the mastery of grammar in terms of implicit (highly automatized) knowledge (DeKeyser 2017; Ellis, 2009);
- b) *focused communication task*, simultaneously targeting the three structures but, due to its design also naturally including a number of distractors; a task of this kind requires the use of specific TL features for its successful completion (Ellis, 2003); participants read a text and then are asked to retell it being supplied with prompts; their oral performance is audio-recorded with the help of smartphones; contexts for the use of the targeted features are predetermined, with a fixed score being established, which allows according credits for each accurate answer rather than necessitating obligatory context analysis; partial scoring is employed; this tool enables assessment of the selected grammar structures in terms of implicit (highly automatized) knowledge (DeKeyser, 2017; Ellis, 2009);
- c) *written grammar test*, focusing on the targeted structures but also containing distractors; students are required to paraphrase sentences in such a way that meaning is retained but a specific TL feature needs to be used; partial scoring is employed; the tool sheds light on the mastery of the targeted structures with respect to explicit knowledge (DeKeyser, 2017; Ellis, 2009);
- d) *untimed grammaticality judgment test*, focusing on the targeted forms but also including distractors; students are asked to decide whether a given sentence is correct or not and offer an explanation for their decision; partial scoring is used; the tool sheds light on the mastery of the targeted structures in terms of explicit knowledge (DeKeyser, 2017; Ellis, 2009).

Autonomy in learning TL grammar

- a) *a questionnaire* comprising 21 5-point Likert-scale statements, such as: “I plan my learning of English grammar in advance”, “I know what goals I want to achieve in learning English grammar this semester”, or “I practice my English grammar mostly when a test or exam is coming”, with some of the items being key-reversed; the inventory provides insights into changes in the level of participants’ autonomy in learning grammar over the course of SBI;
- b) *learning journals* kept by the students throughout the SBI (see above); this instrument makes it possible to capture qualitative changes in the participants’ autonomy during the intervention.

ID factors mediating GLS use

- a) *beliefs about grammar instruction* are tapped into with the help of a modified version of the questionnaire designed by Pawlak (2012d), consisting of 30 5-point Likert-scale items; the statements reflect beliefs concerning the following areas: (1) the role of grammar, (2) the syllabus (i.e., structural or task-based), (3) planning grammar-based lessons, (4) introducing grammar structures, (5) practicing grammar structures (i.e., with respect to production and reception, controlled exercises or communicative activities), and (6) corrective feedback on grammar errors;
- b) *learning styles* are tapped into by means of the *Learning Style Survey*, developed by Cohen, Oxford and Chi (2001), which includes 5-point Likert-scale items and focuses on 11 pairs of learning styles (e.g., inductive vs. deductive, field-independent vs. field-dependent, global vs. particular, impulsive vs. reflective);
- c) *motivation* is operationalized as motivated learning behavior and measured by means of a scale adapted from Kormos and Csizér (2008); the original scale consists of nine 5-point Likert-scale items;
- d) *L2 grit* is tapped into by means of the scale constructed by Teimouri, Plonsky, and Tabandeh (2020); the tool includes nine items reflecting: (1) perseverance of effort (five items) and (2) consistency of interest (four items);
- e) *curiosity* is measured by means of the *Language Learning Curiosity Scale* (LLCS), designed by Mahmoodzadeh and Khajavy (2019); the tool consists of 11 items representing two factors: (1) language curiosity as a feeling of interest, and (2) language curiosity as a feeling of deprivation;
- f) *enjoyment* is tapped into by means of the *Short Form of the Foreign Learning Enjoyment Scale*, developed by Botes, Dewaele and Greif (2021); the instrument encompasses 9 items concerning different aspects of L2 learning enjoyment, viewing it as unidimensional;
- g) *engagement* is measured by means of in-class questionnaires where the participants are asked to retrospectively indicate the level of their involvement in the SBI sessions at fixed time intervals; the tool allows a composite as well as holistic view of their engagement in GLS training.

Data Analysis

The data collected with the help of the research tools described above will be subjected to quantitative and qualitative analysis depending on their nature. Quantitative analysis will be applied in the case of the data gathered by means of Likert-scale questionnaires and self-ratings of engagement. It will involve calculating the scores for the variables under investigation for all participants (i.e., GLS use, separately for the four categories and the subcategories constituting cognitive strategies as well, autonomy, beliefs, motivation, grit, curiosity, enjoyment and engagement, also separately for each categories involved if several subscales are included, and learning styles, separately for each of the components of the scale). When it comes to the mastery of the targeted grammar structures in terms of explicit and implicit (highly automatized) knowledge, the number of points obtained on the four measures will be tabulated. Partial scoring will be used (0, 0.5, 1 points) based on predetermined criteria. Subsequently,

the procedures of descriptive statistics (i.e., calculating means and standard deviations) and inferential statistics (e.g. correlational analysis, analyses of variance, regression analyses and cluster analyses) will be employed with the purpose of determining the efficacy of GLS instruction, making comparisons between the cohorts, establishing the mediating role of the ID factors under investigation as well as identifying distinct learner profiles with respect to GLS use. Qualitative analysis will be applied in the case of the entries in the learning journals, responses to open-ended questions in the questionnaires filled out after the administration of the measures of L2 knowledge, post-intervention questionnaires as well as questionnaires tapping into teachers' opinions about the SBI. Such analyses will consist in pinpointing tendencies common to all participants.

Conclusion

The present paper has provided an overview of key issues involved in defining and classifying GLS, it has synthesized the available empirical evidence in this area and, most importantly, it has offered a description of the research project which aims to gauge the effects of SBI focused on GLS, both with respect to changes in the use of such strategies, the mastery of three selected grammar features and the development of autonomy in learning L2 grammar, also taking into account the mediating role of selected ID factors. The study has the potential to make a valuable contribution to GLS research which has only marginally investigated the role of SBI. It is also innovative for several reasons: it combines the macro- and micro-perspective, it examines GLS use longitudinally, it considers both explicit and implicit (highly automatized) knowledge of the targeted grammar structures, and it takes into account the moderating role of ID factors in shaping the results of the intervention. Equally importantly, the findings of the research project may have important pedagogical implications for enhancing the effectiveness of GI not only in the case of English majors but, potentially, L2 learners at lower educational levels. The pedagogic intervention is also expected to bring with it tangible benefits in the context in which it is being conducted (i.e., degree programs for English majors) by increasing the mastery of grammar structures, ensuring more accurate, meaningful and appropriate use of such structures in spontaneous interactions, enhancing students' understanding of what grammar learning entails, increasing the effectiveness of teaching grammar in the dedicated grammar courses in the program, fostering greater individualization of GI, and, ultimately, improving participants' instructional practices with respect to teaching grammar when they become L2 teachers in the future. Obviously, as it has already turned out during the implementation of the successive stages of the study, a number of challenges need to be confronted, one of which is related to the feasibility of conducting SBI in limited time when specific curricula objectives need to be met and teachers' understandable reluctance to compromise such objectives. Despite such difficulties, considering all the envisaged payoffs, it could reasonably be argued that intervention-based studies like the one described in this paper hold the promise of bridging the gap between theory, research and teaching practice in the area of teaching and learning L2 grammar (cf. Larsen-Freeman, 2015).

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Ethics Declarations

Competing Interests

No, there are no conflicting interests.

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