Measuring implicit and explicit grammatical knowledge in second language acquisition

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Abstract

Previous research shows that due to non-facilitative first language (L1) transfer, second language (L2) speakers do not develop implicit knowledge of certain grammatical structures. Therefore, the present paper investigates whether L1-Sinhala–L2-English speakers could acquire implicit knowledge of English object pronouns. To achieve this goal, the paper compares data collected via an untimed grammaticality judgment task (untimed GJT) and an oral production task (OPT). The untimed GJT measured explicit knowledge, whereas implicit knowledge was measured by the OPT. The two tasks tested the knowledge of object pronouns by L2 English speakers. The object pronominalization differs in Sinhala and English. Object pronouns are expressed overtly in English. Sinhala has overt and null object pronouns. However, null object pronouns are ungrammatical in English. Under the facilitative transfer from Sinhala, L2 speakers would accept overt object pronouns (grammatical structure). On the other hand, under the non-facilitative transfer, they would accept null object pronouns (ungrammatical structure). A prediction was also made regarding the two tasks. If L2 English speakers had acquired explicit and implicit knowledge of object pronouns, they would be target-like on object pronouns in the two tasks. In the untimed GJT, the L2 speakers differentiated between grammatical and ungrammatical structures. However, they frequently used ungrammatical structures in the OPT. Therefore, the results suggest that implicit knowledge of object pronouns is still unavailable in Sinhala–English interlanguage.

Keywords: object pronouns, L2 acquisition, L1 transfer, object pronominalization

INTRODUCTION

Previous research shows that due to non-facilitative first language (L1) transfer, the development of implicit knowledge is much slower than the development of explicit knowledge (Ellis, 2005, 2008; 2009, 2011). Therefore, the present paper investigates whether L1-Sinhala speakers learning English as a second language (L2) could acquire implicit knowledge of object pronouns in English.

Implicit and explicit knowledge was first studied in cognitive psychology, and later it developed as one of the central topics in psychology (Perruchet, 2008; Cleeremans, Destrebecqz, & Boyer, 1998). Similarly, implicit and explicit knowledge has a long-stand interest in L2 acquisition research (Ellis, 2005, 2008; 2009, 2011). Initial studies in the field of second language acquisition come from the studies of Krashen (1981). Krashen (1981) maintains that implicit knowledge involves the subconscious internalisation of grammar rules, whereas explicit knowledge involves the conscious formulation of grammar rules and structures. However, he does not define what he meant by 'subconscious' and 'conscious' (Ellis, 2005). In psycholinguistics and L2 acquisition literature, a number of terms have been used to refer to implicit and explicit knowledge (Bialystok, 1978). Explicit knowledge is often referred to as conscious and declarative knowledge, whereas implicit knowledge is called as unconscious and procedural knowledge (Schmidt, 1990). It is generally believed that the most acceptable definition of implicit and explicit knowledge in L2 acquisition literature was proposed by Ellis (2005).

According to Ellis (2005), implicit knowledge is the procedural knowledge that can be accessed automatically through input, and it cannot be verbalised. Further, implicit knowledge can be easily and rapidly accessed in unplanned language use (Bowles, 2011; Ellis, 2005). In contrast, explicit knowledge is declarative, and it can only be accessed through intentional learning. Ellis (1995) also maintains that, unlike implicit knowledge, explicit knowledge could be verbalised. Previous studies also show that explicit knowledge is learnable, and it can be learnt at any age (Bialystok, 1982). However, the ability to learn implicit knowledge is constrained by age, and some of the linguistic features are easier to learn than others (Birdsong, 2006).

Another important debate concerns whether implicit and explicit knowledge systems are related or whether the two types of knowledge are separate entities. In other words, researchers try to ascertain whether there is an interface between the two knowledge systems (Ellis, 2005). Three propositions have been discussed, namely, the non-interface, the strong interface, and the weak interface proposals. The non-interface position claims that implicit and explicit knowledge systems are two separate entities (e.g., Paradis, 1994;

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Schwartz, 1993; Krashen, 1981; Ullman, 2001). Paradis (1994) suggest that bilinguals with aphasia gradually lose the ability to use their L1 while maintaining the ability to converse in their L2. According to Paradis (1994), this provides evidence to believe that two types of knowledge are separate systems. Paradis (1994) suggest that bilinguals with aphasia gradually lose the ability to use their L1 while maintaining the ability to converse in their L2. According to Paradis (1994), this provides evidence to believe that two types of knowledge are separate systems. Ullman (2001) maintains that regular and irregular morphological forms are processed differently. He suggests that implicit knowledge allows us to process regular morphological forms, whereas irregular forms are processed by accessing explicit knowledge. Therefore, he also believes that two types of knowledge are two separate systems.

However, some scholars have viewed explicit and implicit knowledge as continuous rather than dichotomous, and they support the strong interface position (e.g., Ellis, 2005; DeKeyser, 1998; Bialystok, 1982). DeKeyser, (1998) maintains that adult L2 learners first develop an explicit representation of L2 grammar. However, they gradually learn implicit knowledge through communicative practice. Further, Bialystok (1982) also points out the two types of knowledge are linked as L2 learners draw on both systems as they acquire an L2. L2 learners typically learn the implicit and explicit knowledge of the same linguistic feature (Bialystok, 1982).

The weak interface position claims it is possible for explicit knowledge to convert into implicit knowledge (Ellis, 2011, 2005, 2008). However, according to Ellis (2011), the conversion depends on different learnability conditions. The following section examines previous studies on implicit and explicit knowledge.

LITERATURE REVIEW

In previous studies, explicit knowledge is often measured by asking L2 learners to explain a certain grammar rule when it has been violated, whereas implicit knowledge is measured by examining the use of linguistic features in speaking and writing (Sorace, 1985). Implicit and explicit measures used in the present study are explained later in the paper.

Green and Hecht (1992) tested implicit and explicit knowledge in L2 German. They recruited native German speakers who were studying at schools or universities. They collected the data via an error correction task. The results showed that the participants were able to correct 78% of ungrammatical sentences. However, in 54% of cases, they failed to explain the correct grammar rule.

Macrory and Stone (2000) looked at an implicit and explicit knowledge of French perfect tense in English-French interlanguage. The participants were recruited from schools in the UK. First, they were asked to self-report their perception of the French perfect tense. Additionally, they measured their actual knowledge of the French perfect tense via a gap-filling exercise and a written production task. They found that the students have a good explicit understanding of French perfect tense. However, the results suggest that their implicit knowledge has not been fully presented in the English-French interlanguage.

Hu (2002) conducted a study to determine whether Chinese-speaking L2 English learners could use explicit knowledge in spontaneous writing. He first asked the participants to complete two writing tasks, and they were followed by an error correction task and a rule-verbalization task. After completing these tasks, the participants were asked to complete yet another two writing tasks. Hu (2002) predicted that after completing the error correction task and rule-verbalization task, the learners would perform better in the second series of writing tasks. As predicted by Hu (2002), he found that by increasing the explicit understanding of grammar could improve the learners' ability to use the target language spontaneously (implicit knowledge).

Elder and Ellis (2009) investigated the relationship between implicit and explicit knowledge. The researchers measured implicit knowledge via a timed grammaticality judgment test (timed GJT), and implicit knowledge was measured via an untimed GJT and a metalinguistic knowledge test. They found that implicit and explicit knowledge systems are positively correlated with language proficiency. Implicit knowledge correlated strongly with speaking and listening skills, whereas writing skills were more closely correlated with writing skills. They also found that implicit knowledge develops much slower than implicit knowledge.

Roehr (2008) also reports similar results by looking at an explicit knowledge of L2 German. Roehr (2008) found a positive correlation between language proficiency and explicit knowledge. Renou (2001) also found a positive correlation between listening and comprehension skills and implicit knowledge of L2 French grammar. Additionally, these researchers report that the development of implicit knowledge is much slower than the development of explicit knowledge.

Han and Ellis (1998) investigated explicit and implicit knowledge in L2 English. Participants were recruited representing different L1 backgrounds. The data were collected via four tasks: a timed grammaticality judgment task, an oral production task, a delayed grammaticality task and a metalinguistic task. The first two tasks measured implicit knowledge, whereas the second two, explicit knowledge. The results showed implicit and explicit knowledge systems are unrelated. Further, the findings also suggest that implicit knowledge of L2 grammar is not available in their interlanguage. The next section presents that the rationale of the present study.

RATIONALE AND LINGUISTIC BACKGROUND

Sinhala and English differ with respect to the object pronominalization. As illustrated in (1), referential object pronouns are expressed overtly in English, and overtly expressed referential object pronouns are obligatory in English as shown in (2). Sinhala also has overt object pronouns as in (3b). However, additionally, it allows null object pronouns as in (3c).

1. Did you see Peter?
   Yes, I saw her.
2. Did you see Peter?
   *Yes, I saw ø.
3. a. oyya Mala dækk-a də?
      you Mala see-PST.1.SG Q
      'Did you see Mala?'
   b. ow mame eyya dækk-a.
      yes I her see-PST.1.SG
      'Yea, I saw her.'
      c. ow mame ø dækk-a.
      yes I (her) see- PST.1.SG
      'Yea, I saw (her).

It was hypothesized that due to the cross-linguistic difference between Sinhala and English, L1-Sinhala–L2-English speakers would encounter learnability issues while acquiring object pronouns in English. Furthermore, they would not develop implicit knowledge of object pronouns in L2 English. Considering the cross-linguistic difference between Sinhala and English, I formulated the following predictions.

HYPOTHESES

Hypothesis 1: If the L1-Sinhala–L2-English speakers have explicit knowledge of object pronouns in L2 English, their performance will be target-like in explicit tests.

Hypothesis 2: If the L1-Sinhala–L2-English speakers have implicit knowledge of object pronouns in L2 English, their performance will be target-like in implicit tests.

Hypothesis 3: If the L1-Sinhala–L2-English speakers have implicit and explicit knowledge of object pronouns in L2 English, their performance will be target-like in implicit tests and explicit tests.

METHODOLOGY

Participants

Two groups took part in the experiment: an experimental group and a control group. In the experimental group, there were native speakers of Sinhala (hereafter L2 speakers). At the time of the data collection, they took part in an intensive English language course in Colombo, Sri Lanka. In the experimental group, there were thirteen participants. However, one participant was later excluded from the experiment, as she could not complete both experiment tasks administered to the participants. The L2 speakers had some exposure to English, and they were at the pre-intermediate level. Eight English native speakers (hereafter L1 speakers) served as a control group. They were recruited from the University of York, UK.

Experimental materials

The experiment included two test instruments. The data was collected via an untimed grammaticality judgment task (untimed GJT) and an oral production task (OPT). The participants started the experiment with the untimed GJT, which was followed by the OPT.

Untimed grammaticality judgement task (Untimed GJT)

Sprouse (2011) states that GJTs are used in a wide variety of linguistic domains like generative linguistic research, language acquisition research, psycholinguistic research, and also classroom-based research. The GJTs can be used for a range of purposes, including screening participants, assessing language proficiency, and determining knowledge types: implicit and explicit. Ionin and Zyzik (2014) state that one of the concerns about GJTs is that they are not natural. In other words, the tokens tested in GJTs do not reflect the real-world use of the target language. According to the authors, another concern about GJTs is that they may only tap into learners' explicit knowledge. However, some researchers have used timed GJTs and audio GJTs to measure implicit knowledge of nonnative speakers (Ellis, 2005; Murphy, 1997). Further, judgment data is important as they allow us to understand what structures are allowed and disallowed by native and nonnative speakers (Ionin & Zyzik, 2014; Schütze & Sprouse, 2014). Most importantly, GJTs can be used to test syntactic structures that are rare in spontaneous speech (Loewen, 2009). In this study, an untimed GJT was used to measure explicit knowledge of object pronouns in L2 English.

The untimed GJT included thirty experimental tokens and twenty fillers. The thirty experimental tokens were divided equally (15 grammatical and 15 ungrammatical). The untimed GJT tested the grammaticality contrast between S-V-ObjPro and *S-V-ø (as in 4 and 5). The grammatical tokens focused on the S-V-ObjPro structure as in (4b), whereas the ungrammatical tokens tested the *S-V-ø structure as in (5b). Twenty fillers were divided equally (10 grammatical and 10). Each experimental token and filler consisted of a two-person short dialogue in English (as in 4 and 5). The subjects were asked to judge the acceptability of the statements given by the second person in the dialogues. The judgments of the participants were measured on a five-point Likert scale of -2 to +2 where -2 means completely unacceptable, and 2 means perfectly acceptable.

Oral Production Task (OPT)

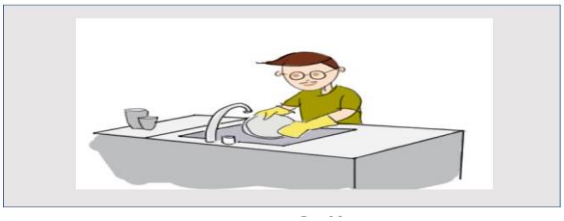
Turning to OPT, Schachter, Tyson, and Diffley (1976) showed the importance of production data in second language research. They state that production data helps us to understand what learners do not know and their sensitivity to different syntactic structures. Selinker (1974) states that researchers need to consider production data as they come from observable and real-life situations. Myles (2005) argues that the language produced by L2 learners, despite processing and parsing difficulties, shows the most directly the state of learners' interlanguage. There are two types of production data: oral and written (Indrarathne, Ratajczak & Kormos, 2018).

In the present study, I focus on oral production data as it allows for more spontaneous data than written. The participants have less opportunity to reflect on learnt linguistic knowledge in In OPTs. Therefore, the OPT was used to measure implicit knowledge of object pronouns in English.

In the OPT, the participants were asked to do a role play with the researcher. The researcher posed questions to the participants (as in Figure 1), and they had to answer the questions by looking at pictures. For each question, the participants were shown different pictures. The total number of tokens was ten. The fillers were not included in the task. The researcher audio recorded the answers, and later the answers were transcribed.

Figure 1: Oral Production Task Token

Every day, John does the dishes after dinner.



What does he do with the plates?

RESULTS

Untimed grammaticality judgement task

As noted previously, the untimed GJT tested the grammaticality contrast between two conditions: S-V-ObjPro and *S-V-ø (grammatical vs ungrammatical). In the untimed GJT, the judgments of the participants were measured on a five-point Likert scale of -2 to +2. The endpoints were defined as completely unacceptable and perfectly acceptable. The descriptive statistics are reported in Table 1.

Table 1: Untimed GJT mean ratings on S-V-ObjPro versus *S-V-ø (scale = -2-+2)

Group	Word order	Mean	SD
L1 English	S-V-ObjPro	1.92	0.30
	*S-V-ø	-1.80	0.33
L2 English	S-V-ObjPro	1.50	0.55
	*S-V-ø	0.40	0.72

The native speakers showed a strong distinction between the grammatical (S-V-ObjPro) and ungrammatical (*S-V-ø) conditions. They had a high mean rating for the grammatical structure (M=1.92, SD= 0.30*),* and a low mean rating for the ungrammatical structure (M= -1.80, SD= 0.33). The paired sample *t*-test was conducted for the two conditions. The result was statistically significant (*t(7)=24.1,p=001*).

In contrast to the native speakers, the nonnative speakers did not differentiate between grammatical and ungrammatical conditions. They attributed a relatively low mean rating to the grammatical condition (M=1.50, SD= 0.55), while their mean rating for the ungrammatical structure was high (M=0.40, SD= 0.70). The paired sample *t*-test was conducted for the two conditions, and the results were statistically significant for the two structures (*t(11)=1.24, p=.001*). This suggests that, like the native speakers, the nonnative speakers have also made a distinction between the grammatical and ungrammatical conditions.

Oral Production Task

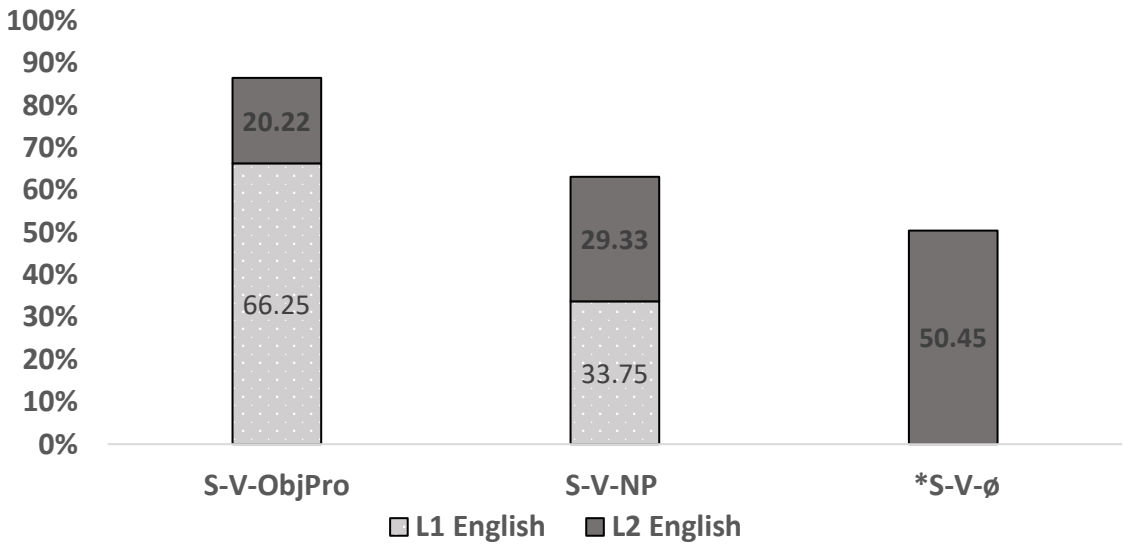
The OPT results are reported in Table 2. The data given in Table 2 are further illustrated in Figure 2. The response pattern of the nonnative speakers included three structures: S-V-ObjPro, S-V-NP and *S-V-ø. As expected, the native English speakers did not use the ungrammatical structure. Furthermore, the native group has 66.25% use of object pronoun structures, suggesting their strong preference for that structure. The nonnative group looks very different from the native group (see Figure 2). The nonnative group has only 22.22% use of S-V-ObjPro structures in their responses. Interestingly, the nonnative speakers predominantly used ungrammatical *S-V-ø structure (50.45%) in their production. Following Rogers (2009), I suggest that they use null object pronouns at above chance level. The L2 speakers also used full NPs (29.33%) in their responses. However, they used this structure less frequently than the English native speakers (33.77%). The following section discusses the results in relation to the hypotheses.

Table 2: S-V-ObjPro, S-V-NP and *S-V-ø choices in percentages

	L1 English	L2 English
S-V-ObjPro	66.25	20.22
S-V-NP	33.75	29.33
*S-V-ø	00.00	50.45

Source:

Figure 2: Percentage of each structure produced by groups



DISCUSSION

In this section, the results detailed in the previous section will be discussed in light of the hypotheses, and then I will conclude which hypothesis is compatible with the results. As noted previously, the present study tested three hypotheses.

Hypothesis 1 states that if the L2 English speakers have explicit knowledge of object pronouns in L2 English, their performance will be target-like in explicit tests. In the present study, explicit knowledge was measured by the untimed GJT. In the untimed GJT, the native speakers made a stark differentiation between the grammatical and ungrammati-

cal conditions. The L2 differentiation between the grammatical and ungrammatical conditions is relatively smaller. However, like the native speakers, the nonnative speakers made a statistically significant distinction between the grammatical and ungrammatical conditions. Therefore, the results are compatible with Hypothesis 1, and it suggests that explicit knowledge of object pronouns is available in the English-Sinhala interlanguage.

Hypothesis 2 states that if the L2-English speakers have implicit knowledge of object pronouns in L2 English, their performance will be target-like in implicit tests. As noted previously, in the present study, implicit knowledge was measured by the OPT. The native speakers predominately used the S-V-ObjPro structure in the production task. However, the L2 speakers look very different from the native English group. They used the ungrammatical structure *S-V-ø more frequently than any other structure. With over 50% use of the *S-V-ø structure, the L2 English speakers showed that they were not target-like on object pronouns in the OPT. Moreover, their linguistic behaviour in the production task suggests a non-facilitative transfer from their L1. Therefore, the OPT results do not support Hypothesis 2.

Turning Hypothesis 3, states that if the L2-English speakers have implicit and explicit knowledge of object pronouns in L2 English, their performance will be target-like in implicit tests and explicit tests. As discussed previously, the L2 speakers were target-like on object pronouns in the untimed GJT, whereas their performance in the OPT clearly diverts from the native norms. Therefore, Hypothesis 3 is not compatible with the results.

It is widely accepted that implicit and implicit knowledge is important to grammar development in L2 acquisition (Ellis, 2005, 2008; 2009, 2011). Further, the two types of knowledge also contribute to L2 proficiency (Ellis, 2005, 2011). The overall results of the present study suggest that implicit knowledge of object pronouns in L2 English is readily available for L2 speakers. However, the experiment shows that spontaneous production of object pronouns is problematic for L2 speakers. Therefore, the findings suggest that the L2 speakers cannot access implicit knowledge of object pronouns in English at this stage.

LIMITATIONS

The present study is not exempt from limitations. The way the explicit and implicit knowledge was measured could have been improved. The study could have been benefited from having additional implicit and explicit measures. For example, for measuring explicit knowledge, a metalinguistic knowledge test could have been used additionally. With respect to measuring implicit knowledge, the experiment could have benefited from a self-paced reading task.

CONCLUSION

The present study was designed to measure implicit and explicit knowledge of object pronouns in L2 English. In line with previous research, it was hypothesized that the L2 English speakers would develop implicit knowledge much slower than explicit knowledge. As predicted, the L2 English speakers were target-like on object pronouns in the explicit test (untimed GJT), whereas in the implicit task (the OPT), due to detrimental L1 transfer, their performance was not target-like. Therefore, the results suggest that implicit knowledge of object pronouns is still unavailable in L1-Sinhala–L2-English interlanguage.

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