

Tanulmány

Krisztina Sándor

Grammaticality Judgement Tests as Measures of Explicit Knowledge

Abstract

The paper investigates whether grammaticality judgement tests (GJT) are valid measures of explicit knowledge of second language learners and examines whether the two established aspects of GJTs, which are time pressure (presence or absence) and task stimulus (grammatical or ungrammatical), satisfy the construct validity requirements of GJTs or further aspects are called for. The investigation was carried out by applying two tests developed by R. Ellis (2005) and the results of the present study are compared with those of earlier studies (Bowles 2011; Ellis 2005; Gutierrez 2012). Exploratory Factor Analysis revealed that in contrast with earlier findings, neither the timed, nor the untimed grammaticality judgement scores loaded on the explicit factor. Although, the results of the Confirmatory Factor Analysis were not unequivocal, the values approximated the expected limits. Regarding the fact that the structure, content and methodology of the tests applied in the present study are identical with those of Ellis' and are similar to those of the other two studies (Bowles 2011; Gutierrez 2012), it is assumed that a third aspect has to be taken into consideration which also has an effect on the validity of GJTs. This aspect is the grammatical difficulty of tests. Participants of the present study are highly proficient second language learners, whose proficiency level is at C1, as opposed to the participants of the earlier studies, whose level varies between A2-B2. Adjusting the grammatical difficulty of grammaticality judgement tests to the proficiency level of the test-takers proves to be fundamental when applying GJTs as valid measures of explicit-implicit knowledge.

Keywords: explicit knowledge and grammatical judgement tests

Theoretical Background

A vast number of SLA research aims to define and describe the role of explicit and implicit knowledge as well as their relation to each other. Up till now, there has been no consensus among researches regarding either the definition of the two constructs or the relationship between explicit and implicit knowledge. As a general definition, agreed by most researchers of the field (Ellis 2004, Paradis 2009, Ullman 2005), explicit knowledge is conscious, declarative and controlled. Learners are aware of this knowledge and as such consciously apply it in language use. Ellis (2004) further divides it into analysed knowledge (potentially aware) and metalanguage knowledge (knowledge of rules) and states that the explicit and implicit learning processes work together dynamically and take place consciously. Paradis (2009) approaches the issue from a different point of view. He makes a distinction between metalinguistic knowledge and implicit procedures instead of explicit and implicit knowledge

and emphasises that there is no continuum between the two constructs as explicit knowledge will never become implicit competence by the very nature that they are sustained by different memory systems and reside in different areas of the brain. In this reading, explicit knowledge is equivalent to metalinguistic knowledge that is to knowledge of rules, technical and semi-technical terms. The different standpoints of researchers are represented in the interface debate, in which Paradis together with Krashen (1981) and Hulstijn (2002) are the proponents of the non-interface position. DeKeyser (2003), representative of the strong interface position, states that explicit knowledge can become implicit when it is used with the same automaticity as implicitly acquired knowledge. DeKeyser (2003) even proposes that awareness of rules can be lost. The knowledge that is left behind is procedural both functionally and by nature. Yet again, proponents of the weak interface position like Ellis (2005), do not rule out the possibility that explicit knowledge may turn into implicit, but posit certain criteria on it such as the developmental readiness of the learner; that explicit knowledge promotes the development of implicit knowledge only indirectly; that the output of explicit knowledge is the auto-input of implicit knowledge. Unfortunately, many contributions to this debate, as Hulstijn (2004) remarks, are characterised by the usage of vague terms and the lack of cognitive architectures or related brain areas, which question the empirical nature of the issue on the basis. One thing is important to note, though. I suggest that explicit knowledge, which either turns directly into implicit knowledge or just initiates a mechanism in the procedural system, which promotes implicit competence, is the basis of implicit linguistic competence. This paper does not intend to take a stand in the interface debate, as it is beyond the scope of this research. What it intends to investigate is whether GTJs are valid measures of the explicit construct, or not.

Grammaticality Judgement Tests as Measures of Explicit Knowledge

Grammaticality Judgement Tests (GJT) have been commonly used for a long time in SLA to measure second language learners' (i) linguistic ability and also (ii) to decide whether L2 learners rely on their explicit, implicit or both knowledge sources when making judgements about the well-formedness of sentences by modifying the two aspects of GJTs, which are time pressure and task stimulus. In the studies of Bowles (2011), Ellis (2005) and Gutierrez (2012), GJT scores are investigated by multiple factor analyses to decide whether test takers rely on their explicit or implicit knowledge when completing the task. Ellis (2004) proposes that test takers undergo a three-stage process while performing a GJT, which are the 'semantic processing' whereby learners understand the meaning of a sentence; the 'noticing' phase, when they realise if the given sentence is formally correct or not; and the 'reflecting' phase, when they identify what is ill-formed and why. In the case of timed grammaticality judgement tests, (TGJT) test-takers have no time left to process the third phase, i.e. to draw on their explicit, declarative knowledge, instead they are expected to draw on their implicit competence. In case there is no time-constraint on the learner, the use of explicit knowledge is assumed.

Defining the appropriate response time in the case of TGJTs is a critical issue, as the amount of time learners are provided with to make a judgement defines the speed with which they have to perform the task, whether they have time left to rely on their explicit knowledge (reflecting phase), or not. Early research studies did not pose a time limit on the test-taker,

however, recent studies do, which may vary from 3,5 seconds (Han 1997) to 6-9 seconds depending on the sentence length (Gutierrez 2012) or even 10 seconds (Mandell 1999). Yet again, others adjust the time limit of each sentence individually by timing native speakers' performance beforehand (Ellis 2009; Bowles 2011). Regarding that TGJTs are designed to tap implicit knowledge, which is inherently present in NSs' linguistic knowledge, timing their performance provides researchers with reliable data. Setting the right amount of time is a crucial element to create a valid measure. Most studies have found that time pressure, rather than item grammaticality, was fundamental in L2 learners' performance (Bowles 2011; Zhang 2015). However, it is not always the case.

Task stimulus, which refers to the grammaticality or ungrammaticality of sentences, may also affect whether learners draw on their explicit or implicit knowledge when judging them. Ellis (2005) and Gutierrez (2012) found that the grammatical section of the UGJT, which is expected to load on the explicit factor proved to be a measure of implicit knowledge, and only the ungrammatical section of the UGJT loaded on the explicit factor. They concluded that the processing of ungrammatical morphological and syntactic structures imposes a more difficult task on the L2 learner, requiring more processing time, and not only procedural, but also declarative knowledge is called for when completing the task. These studies investigate the relationship between explicit knowledge and the processing of ungrammatical structures only in relation to grammar, but not in relation to other areas of language like semantics, pragmatics or lexis. Yet again, in other cases both the grammatical and the ungrammatical sections of UGJT loaded on the explicit factor (Bowles 2011; Zhang 2015). The reason for this might be, as Ellis (2004) also notes, that GJTs with different elements, focusing on different structures applied with learners of different proficiency levels give different results.

Investigating variables in the case of untimed grammaticality judgement tests such as certainty of judgements or self-reports of test-takers may lend further support to the construct validity of GJTs. These tasks require students to indicate the certainty with which they made their judgements by writing a number between 50-100% and also to state whether their judgements were based on 'rule' or 'feel'. Most, however, focus on only the first two aspects.

Review of Earlier Studies

In the forthcoming section the test content, the participants and the testing procedure applied in three specific studies will be introduced briefly, all of which aimed to validate GTJs as measures of explicit knowledge. The results of these studies are compared with the findings of the present study.

The GJTs applied in the present study were developed by Rod Ellis (2005) as parts of a battery of five tests [explicit measures: metalinguistic knowledge test (MKT), untimed grammaticality judgement test (UGJT); implicit measures: timed grammaticality judgement test (TGJT), elicited oral imitation test (EOIT), oral narrative test (ONT)], all designed to measure explicit and implicit knowledge based on the following four criteria: degree of awareness, time available, focus of attention, and utility of knowledge of metalanguage.

Ellis' test-takers totalled 111, of whom 20 were native speakers and the rest were L2 learners of English, most of whom came from China with mixed language proficiency,

ranging from B1 to C1 of the CEFR¹. The considerably higher scores of native speakers on both the TGJ and the UGJ tests provided construct validity to the instruments. The instruments and the procedure applied by Ellis are introduced in the next section. Both tests were computer-based, no separate answer sheets were used.

Bowles (2011) conducted research by developing an instrument in Spanish focusing on the same aspects as Ellis (2005) did; Bowles also selected 17 different grammatical structures universally problematic for Spanish L2 and SH learners including two grammatical and two ungrammatical sentences. The test contained early (subject-verb agreement) and late acquired forms (indicative vs. subjective) from a wide range of proficiency levels (plural –s, modal verbs). The participants numbered 30, consisted of Spanish native speakers (10), L2 learners of Spanish (10) and Spanish heritage learners (10). The procedure was identical with that of Ellis'. The proficiency level of L2 speakers was B1 (B2). Heritage learners were raised in bilingual English-Spanish families.

Gutierrez (2012) investigated the nature of knowledge representations with two groups of L2 Spanish learners (A2 and B1), applying GJTs. Both the timed and the untimed GJTs, which were developed by the author based on Ellis' (2005) test, contained 64 sentences, half of which were grammatical and half of which were ungrammatical covering 16 grammatical structures. The sentences were presented to the learners on a Power Point slide show in the case of the TGJT, where sentences remained on screen between 6 – 9 seconds depending on the sentence length. Learners recorded their answers on an answer sheet. The UGJT contained the same sentences but there was no time constraint and it was a pen and paper test. Table 1. below summarises the methodology of the studies.

	Ellis	Sandor	Gutierrez	Bowles
Number of participants	111	54	53	20
Proficiency level	B1-(C1)	B2-C1	A2-B1	B1- HeritageL2
Language	English	English	Spanish	Spanish
Test content (TGJT, UGJT)	68 sentences	68 sentences	64 sentences	68 sentences
Processing	computer based	computer + paper based	computer + paper based	computer based
Time constraint (sec)	1,8-6,2	3,0-8,0	6,0-9,0	1,7-5,5
Other tests applied	MKT, EOIT, ONT	MKT, EOIT	MKT	MKT, EOIT
Form of instruction (L2 learners)	mixed	mixed	mixed	mixed

Table 1. Summary of methodology – Ellis 2005; Sandor 2015; Gutierrez 2012 and Bowles 2011

¹ The equation of proficiency levels with the CEFR (Common European Framework of Reference) levels was based on IELTS guidelines (http://www.ielts.org/researchers/common_european_framework.aspx).

The Current Study

The study, which is part of a larger investigation measuring the explicit-implicit knowledge use of L2 learners (Sandor 2015), seeks answers to the following research questions:

- RQ 1. Are GJTs valid measures of explicit knowledge as defined by Ellis?
- RQ 2. Is there a universal GJT, which proves to be a valid measure of explicit knowledge, or the adjustment of these tests in terms of grammatical difficulty is inevitable?

In order to answer these questions the following hypotheses were formulated:

1. Learners will draw on their explicit knowledge when there is no time pressure and when ungrammatical structures are to be judged.
2. The less difficult a structure is in terms of grammatical difficulty, the more learners rely on their implicit competence as opposed to their explicit knowledge.

Participants

The 54 Hungarian test-takers of the study, 36 females and 18 males, were 1st-year English major students of the University of Debrecen (UoD L2 learners), who had been studying English for 9.5 years on average in a formal, foreign language context. Only two of the test-takers had lived in an English-speaking country, for 12 and 3 months, respectively. All participants had formal descriptive grammar courses at the university, which form an integral part of their syllabus. Their level of proficiency varies between B2 and C1 of the CEFR.

Test Content and Procedure

The timed and untimed grammaticality judgement tests, together with other tests not reported in this study, were completed in one session, in seminar rooms.

Timed Grammaticality Judgment Test – The test consisted of 68 sentences (half of them were grammatically correct, half of them were incorrect), which were presented to the test-takers on a timed Power Point slide show. The choice of grammatical structures were based on the following criteria: i. universally problematic to learners; ii. early and late acquired structures in the developmental process; iii. cover a wide range of proficiency levels; iv. structures consisted of both morphological and syntactic features. The timing of each slide was calculated on the basis of native speakers' performance, adding an extra 20% of time, considering the slower processing capacity of L2 learners. The sentences remained on screen between 3 to 8 seconds, which included an additional 2 seconds, provided for the test-takers to write their responses on the answer sheet. (In the original study the answers were also computer-based.) Three 10-second breaks were inserted into the test. A percentage accuracy score was calculated.

Untimed Grammaticality Judgment Test – This was a pen and paper test with the same test content and task requirements as the TGJT, but without a time constraint. Learners were required to decide on the grammaticality of the sentences. The test-takers in the case of the two tests were identical.

Results

The reliability of both tests was calculated using Cronbach's alpha. Table 2. shows the reliability coefficients of the measures, which are 0.75 and 0.81, lending internal consistency to the tests.

Test	Number of items	Number of test-takers	Reliability
UGJT	68	54	$\alpha= 0.75$
TGJT	68	54	$\alpha= 0.81$

Table 2. Reliability measures for the TGJT, UGJT tests by Sandor's L2 learners (2015)

Table 3. presents the mean scores of the two measures, performed by the test-takers of the current study by Sandor (2015), and those of Ellis' (2005), Bowles' (2011) and Gutierrez's (2012) study.

TESTS	NS Bowles 2011	NS Ellis 2005	L2 learners B2-C1 Sandor 2015	L2 learners bilinguals Bowles 2011	L2 learners B1-C1 Ellis 2005	L2 learners B1 Gutierrez 2012	L2 learners A2 Gutierrez 2012	L2 learners B1 Bowles 2011
UGJT	96	96	88	81	82	71	63	67
TGJT	92	80	83	62	54	64	54	30

Table 3. Descriptive statistics of tests: Sandor's L2 learners (2015), Ellis' L2 learners (2005), Bowles' L2 learners (2011), Gutierrez's L2 learners (2012)

In general, native speakers outperformed second language learners in the timed and untimed grammaticality judgement tests, which provides construct validity for the tests developed by Ellis, except for one case. In the case of the decision-based, timed grammaticality judgment test, which required test-takers to use their implicit knowledge only passively, Sandor's L2 learners scored 3% better (83) than Ellis' native speakers (80). This case calls for further investigation. Bowles' native speakers however scored 9% more than Sandor's L2 learners in the TGJ test, which supports the validity of the test. As expected, more proficient language learners scored better in both tests; Bowles' native speakers scored the highest in both the UGJT and the TGJT, that is 96 and 92 respectively. Bowles' L2 learners (UGJT: 67; TGJT: 30) together with Gutierrez's L2 learners (UGJT: 63; TGJT: 54) – whose language proficiency was the lowest – scored the lowest.

*Krisztina Sándor:
Grammaticality Judgement Tests as Measures of Explicit Knowledge
Argumentum 12 (2016), 216-230
Debreceni Egyetemi Kiadó*

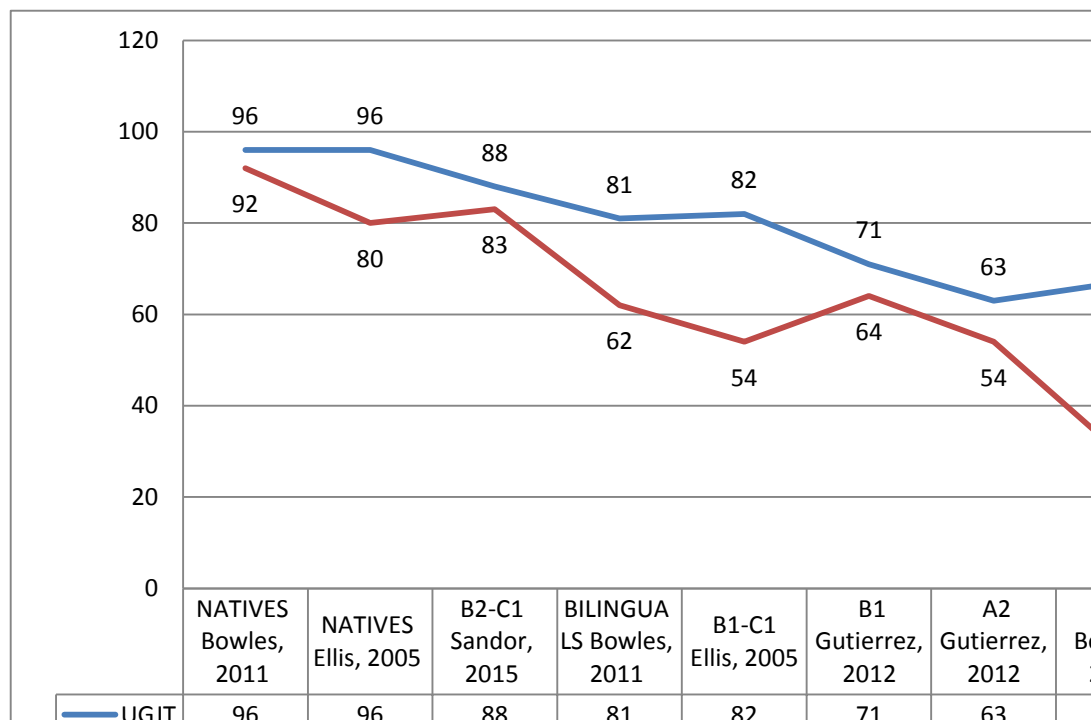
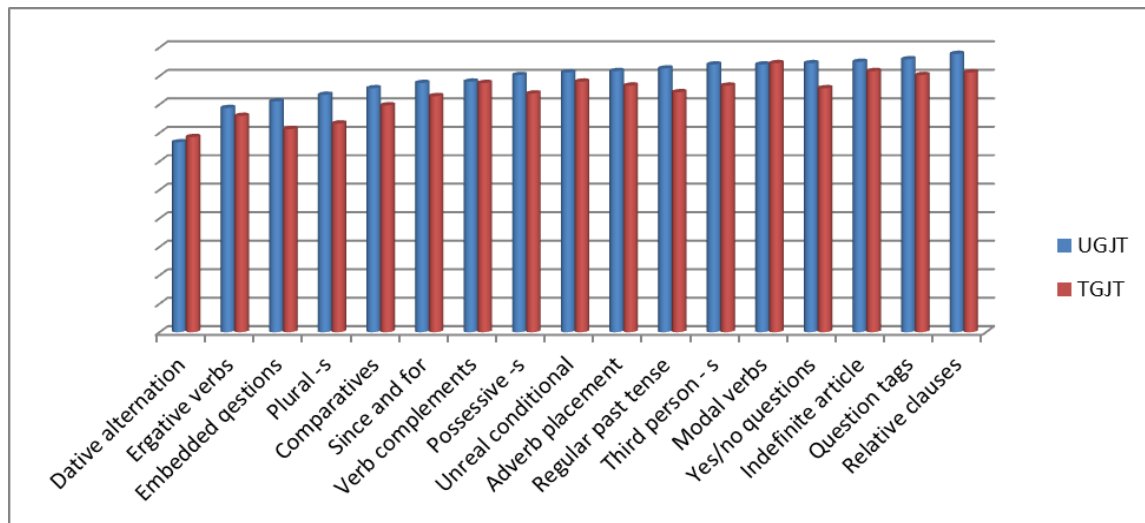


Figure 1. Descriptive statistics of tests: Sandor's L2 learners (2015), Ellis' L2 learners (2005), Bowles' L2 learners (2011), Gutierrez's L2 learners (2012)

Figure 1. above shows that all groups of learners, both natives and L2 learners, scored better in the UGJT test, which puts no time constraint on the learner, making it possible for them to rely on their explicit knowledge in case their implicit competence is not yet available.

Figure 2. below shows the mean accuracy score of each grammatical feature. It reveals which items proved to be the most problematic in terms of grammatical difficulty and which presented less challenge for learners. In the case of 'verb complements' and 'modal verbs' students reached the same accuracy scores at both tests. Grammatical features like 'dative alternation', 'embedded questions', 'ergative verbs' and 'plural -s' seemed to cause most problems to students in the case of both tests, whereas the least problematic ones were the 'indefinite article', 'question tags' and 'relative clauses'.

Krisztina Sándor:
Grammaticality Judgement Tests as Measures of Explicit Knowledge
Argumentum 12 (2016), 216-230
Debreceni Egyetemi Kiadó



DA	EV	EQ	P-s	C	SF	VC	P-s	UC	AP	RPT	TP-s	MV	Y/N	IA	QT	RC
0,67	0,79	0,81	0,83	0,86	0,88	0,88	0,90	0,91	0,92	0,93	0,94	0,94	0,94	0,95	0,96	0,98
0,69	0,76	0,71	0,73	0,80	0,83	0,88	0,84	0,88	0,87	0,84	0,87	0,94	0,86	0,92	0,90	0,91

Figure 2. Item analysis of UGJT and TGJT of Sandor's L2 learners (2015)

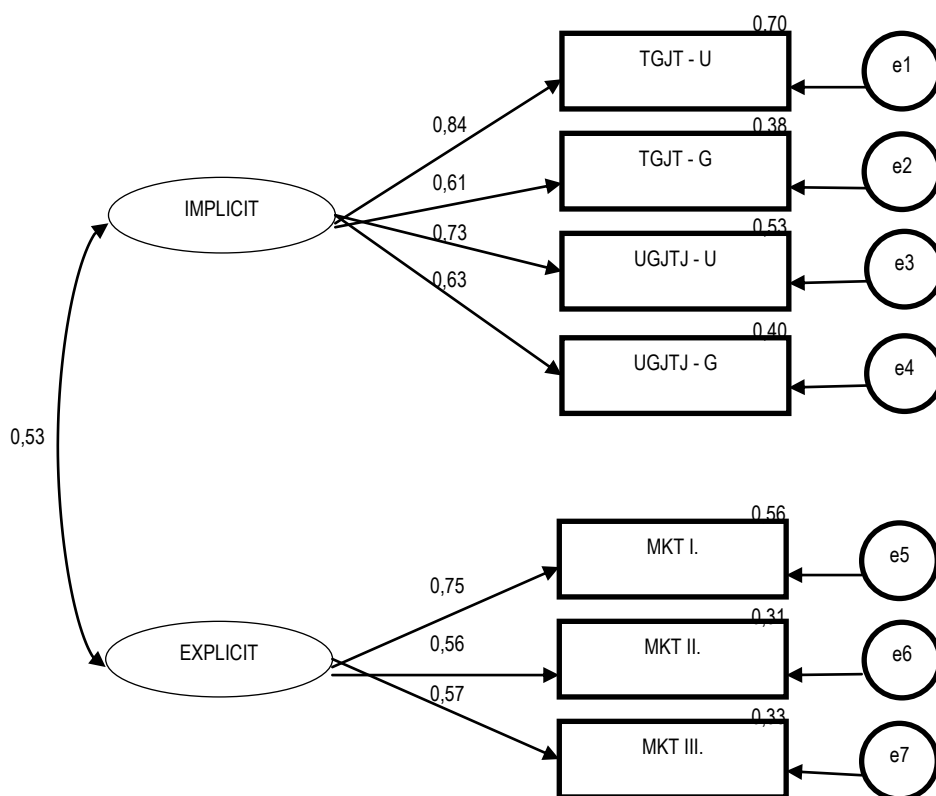
To address Research Question 1. (i.e., if GJTs are valid measures of explicit knowledge as defined by Ellis 2005), an Exploratory Factor Analysis (EFA) was performed. This statistical method is used to uncover the underlying structure of given variables, that is of the explicit – implicit factors. Table 4. shows the loadings of the GJTs to the explicit and implicit factors. In the case of Sandor's L2 learners, neither the time constraint, nor the task stimulus (ungrammatical structures) made learners rely on their explicit knowledge source. All GJTs, regardless of the distribution of grammatical and ungrammatical structures in them, loaded heavily on the implicit factor that is on Component 2. Only the clearly explicit metalinguistic knowledge test (MKT), which measures the metalanguage knowledge of learners (rules, definitions) and which does not form part of the present study, loaded on Component 1.

	Component 1	Component 2
UGJT gr	0.506	0.620
UGJT ungr	0.854	0.049
UGJT total	0.889	0.091
TGJT	0.880	0.146
MKT	0.029	0.907

Table 4. EFA loadings for Sandor's L2 learners. Loadings on the given component are printed in bold.

Regarding the fact that the agenda of the study was verificational rather than exploratory, as the loadings of the constructs – based on the EFA results – were a priori hypothesized a Confirmatory Factor Analysis (CFA) was carried out. Only the clearly explicit MKT was expected to load on the explicit factor, the UGJT and the TGJT on the implicit factor.

Although the two factors correlated ($r = 0,53$), and were relatively separate as expected, the proposed model did not offer a good fit (Figure 3).



Not all indicators support unanimously the proposed model as both the NFI ($> 0,95$) and RMSEA ($< 0,05$) values exceed the threshold.

Figure 3. Explicit-Implicit Model

Model	χ^2	NFI	RMSEA	df	p
Explicit/Implicit	23,855	0,799	0,126	13	0,032

Table 5. Summary of the model fit for the solution in Figure 1

NFI: normed fit index; RMSEA: root mean square error of approximation; df: degree of freedom, **p < 0,05

Ellis (2005) and Gutierrez (2012) also investigated whether learners would draw on different knowledge sources when processing grammatical and ungrammatical structures, or not. This measure in Ellis' study was initiated by the fact that the eigenvalue for the explicit component in the Exploratory Factor Analysis was only 0.822 and did not reach the threshold of 1.0. Replacing the total UGJT scores with the scores for the ungrammatical sentences the eigenvalue with 0.982 approximated the 1.0 threshold, providing justification for both

components (explicit-implicit). In Gutierrez's study the applied Confirmatory Factor Analysis did not offer a good fit when the total UGJT was proposed to the explicit factor, however, when only the ungrammatical section was proposed the model offered a good fit. Separating the UGJT, based on the aspect of task stimulus into UGJT grammatical and UGJT ungrammatical, the followings results were gained:

	Component 1	Component 2
UGJT gr	0.037	-0.917
UGJT ungr	0.939	0.026
TGJT gr.	-0.030	-0.953
TGJT ungr.	0.782	-0.054
MKT	0.717	0.019

Table 6. EFA loadings for Gutierrez's L2 learner. Loadings on the given component are printed in bold.

In the case of Gutierrez's study, not only the ungrammatical section of the UGJT but also that of the TGJT constituted a measure of the explicit factor. Both of them loaded heavily (0.939; 0.782) on the explicit factor.

	Component 1	Component 2
TGJT	0.760	0.262
UGJT ungr	0.265	0.869
MKT	0.161	0.88

Table 7. EFA loadings for Ellis' L2 learners. Loadings on the given component are printed in bold.

Whereas in Ellis's study the ungrammatical UGJT proved to be a measure of the explicit factor, the grammatical UGJT together with the total TGJT proved to be a measure of the implicit factor.

In the case of Bowles' (2011) study separating the UGJT into grammatical and ungrammatical sections was not initiated, as the applied Confirmatory Factor Analysis revealed a strong and clear loading of the total UGJT on the explicit factor.

Discussion

The aim of this paper, on the one hand, was to investigate whether GJTs developed by Ellis (2005) provide valid measures of explicit-implicit knowledge and, on the other hand to reveal the possible flaws in GJT design by comparing the results of the present study with those of earlier studies. In order to answer these questions the following hypotheses were formed.

Based on Ellis' results it was hypothesised that learners would draw on their explicit knowledge when there is no time pressure and when ungrammatical structures are to be judged. This hypothesis was not fully confirmed by the present study. Exploratory Factor Analyses revealed that neither the lack of time constraint (TGJT) nor the ungrammaticality of tasks (UGJT ungr.) made the test-takers of the present study rely on their explicit knowledge.

Instead, they used their implicit competence, which was available to them either directly, by turning explicit knowledge into implicit as proposed by the representatives of the interface position, or indirectly, by developing an independent, separate network, implicit in nature, as proposed by the representatives of the non-interface position. However CFA findings did not fully confirm the hypothesis, as not all indicators supported the proposed model. In Bowles' and Gutierrez's study, Ellis' hypothesis gained only partial support, as in both cases besides other variables, the ungrammatical section of the UGJT, or the UGJT as a whole loaded heavily on the explicit factor. Learners, with lower proficiency levels relied more on their explicit knowledge. Furthermore, Gutierrez's learners used their explicit knowledge source – as indicated by the heavy loading (0.939) on the explicit factor – even when completing the ungrammatical part of the TGJT as there, which means that for these learners it was more the task stimulus than the time constraint aspect which served as an explicit measure. In contrast, Bowles' learners drew on their explicit knowledge if there was a time constraint regardless of the grammaticality of sentences. Investigating the loadings of the tests, the picture we get is rather heterogeneous, even though the methodology of the applied tests (content, process, evaluation) is very much alike.

It was hypothesised that the less difficult a structure is in terms of grammatical difficulty, the more learners rely on their implicit competence as opposed to their explicit knowledge. In order to support or reject this hypothesis, the language proficiency levels of learners were compared. Sandor's L2 learners have the highest (C1) whereas Gutierrez's learners have the lowest level of language proficiency. This rank is in accordance with explicit/implicit knowledge use of L2 learners. While in the case of Sandor's students all four types of GTJs (timed-untimed, grammatical-ungrammatical) loaded on the implicit factor in the EFA investigation, which means that they drew on their implicit knowledge when completing the tests, in the case of Bowles', and Gutierrez's L2 students two of the four test types loaded on the explicit factor. In the case of Ellis' L2 learners however, whose language proficiency falls somewhere in the middle of the rank, only one of the four test types loaded on the explicit factor. It is predicted then, that the grammatical processing of a structure, whether it takes place automatically based on procedural, implicit knowledge, or in a controlled way using declarative, explicit knowledge depends on the proficiency level of the learner. Language proficiency however does not equal implicit competence, as it also includes explicitly learnt knowledge. Paradis proposes (2004:30) that "As a skill becomes more proficient, processing shifts from one mechanism (controlled, declarative) to another (automatic, procedural)". Learners rely less and less on their explicit knowledge, as the number of those instances, when implicit, automatic processing is available, is increasing.

Conclusion

The present study addressed two research questions. Regarding the first research question, it was found that the GJTs developed by R. Ellis (2005) did not prove to be valid measures of explicit and implicit knowledge, as the test-takers of the present study relied on their implicit knowledge when completing the UGJT, although test conditions encouraged the use of explicit knowledge (no time pressure, focus on form). With respect to the second research question, it was found that a universally applicable GJT regardless of the proficiency level of the learner, measuring L2 learners' explicit and implicit knowledge is not possible to develop,

as the use of explicit/implicit knowledge largely depends on the proficiency level of the learner in all languages. The higher the proficiency level, the more extensively learners rely on their newly developed implicit competence, the more grammatical structures are processed automatically.

Besides the two established aspects of grammaticality judgement tests, which are the time pressure and the task stimulus, a third aspect, that is the grammatical difficulty of GJTs should also be taken into consideration when designing GJTs to measure explicit knowledge use. The grammatical difficulty of the tasks (early and late acquired structures in the developmental process, range of proficiency levels of structures) should be adjusted to the proficiency level of the test-taker. The more proficient L2 learners are, the more demanding tasks seem to be called for so as to tap their explicit knowledge use. The challenge lies in developing such a test battery.

References

- Bowles, M. (2011): Measuring implicit and explicit linguistic knowledge: What can heritage language learners contribute? *Studies in Second Language Acquisition* 33, 247-271.
- DeKeyser, R.M. (2003): Implicit and explicit learning. In: Doughty, C. & Long, M.H. (eds.): *The handbook of second language acquisition*. Oxford, UK: Blackwell, 313-348.
- Ellis, R. (2004): The definition and measurement of L2 explicit knowledge. *Language Learning* 54, 227-275.
- Ellis, R. (2005): Measuring implicit and explicit knowledge of a second language. A psychometric study. *Studies in Second Language Acquisition* 27, 141-172.
- Ellis, R. Loewen, S., Elder, C., Erlam, R., Philp, J. & Reinders, H. (2009): *Implicit and explicit knowledge in second language learning, testing and teaching*. Bristol, UK: Multilingual Matters.
- Gutiérrez, X. (2012): Implicit Knowledge, Explicit Knowledge, and Achievement in Second language (L2) Spanish. *Canadian Journal of Applied Linguistics* 15(1), 20-41.
- Han, Y. (2000): Grammaticality Judgement Tests: How reliable and valid are they? *Applied Language Learning* 11, 177-204.
- Hulstijn, J. (2002): Toward a unified account of the representation, processing and acquisition of second language knowledge. *Second Language Research* 18, 193-223.
- Hulstijn, J. (2002): Toward a unified account of the representation, processing and acquisition of second language knowledge. *Second Language Research* 18, 193-223.
- Hulstijn, J.H. (2005): Theoretical and empirical issues in the study of implicit and explicit second language learning. *Studies in Second Language Acquisition* 27, 129-140.
- Krashen, S.D. (1981): *Second language acquisition and second language learning*. Oxford: Pergamon.
- Mandell, P.B. (1999): On the reliability of grammaticality judgement tests in second language acquisition research. *Second Language Research* 15, 173-99.
- Paradis, M. (2004): *A neurolinguistics Theory of Bilingualism*. Amsterdam: John Benjamins.
- Paradis, M. (2009): *Declarative and procedural determinants of second languages*. Amsterdam: John Benjamins.

- Sandor, K. (2015): Implicit Knowledge, Explicit Knowledge and Their Relation to General Language Proficiency, In: *The Publications of the MultiScience – XXIX. microCAD International Multidisciplinary Scientific Conference*. Miskolc: Miskolci Egyetem, 1-14.
- Ullman, M.T. (2005): A cognitive neuroscience perspective on second language acquisition: The declarative/procedural model. In: Sanz, C. (ed.): *Mind and context in adult second language acquisition: Methods, theory and practice*. Washington, DC: Georgetown University Press, 141-178.
- Zhang, R. (2015): Measuring university-level L2 learners' implicit and explicit linguistic knowledge. *Studies in Second Language Acquisition* 37, 457-486.

Krisztina Sándor
University of Debrecen
Institute of English and American Studies
Pf. 400
H-4002 Debrecen
reksando@uni-miskolc.hu

Appendix

Sentences of the timed and untimed versions of GJT

1. I haven't seen him for a long time.
2. I think that he is nicer and more intelligent than all the other students.
3. The teacher explained the problem to the students.
4. *Liao says he wants buying a car next week.
5. *Martin completed his assignment and print it out.
6. *We will leave tomorrow, isn't it?
7. He plays soccer very well.
8. *Did Keiko completed her homework?
9. *I must to brush my teeth now.
10. *If he had been richer, she will marry him.
11. *He has been living in New Zealand since three years.
12. Pam wanted to know what I had told John.
13. *They had the very good time at the party.
14. *Between 1990 and 2000 the population of New Zealand was increased.
15. *Liao is still living in his rich uncle house.
16. *Martin sold a few old coins and stamp to a shop.
17. *I have been studying English since a long time.
18. *I can to speak French very well.
19. *Joseph miss an interesting party last weekend.
20. Keiko eats a lot of sushi.
21. Bill wanted to know where I had been.
22. Did Cathy cook dinner last night?
23. Rosemary reported the crime to the police.
24. Mary is taller than her sisters.
25. *Hiroshi live with his friend Koji.
26. Keum wants to buy a computer this weekend.
27. *She writes very well English.
28. If she had worked hard, she would have passed the exam.
29. *Tom wanted to know whether was I going.
30. *I saw very funny movie last night.
31. *The teacher explained John the answer.
32. I must finish my homework tonight.
33. *Keum went to the school to speak to her children teacher.
34. Keiko has been studying in Auckland for three years.
35. *This building is more bigger than your house.
36. That book isn't very interesting, is it?
37. Her English vocabulary increased a lot last year.
38. Hiroshi received a letter from his father yesterday.
39. Does Keum live in Auckland?
40. Liao left some pens and pencils at school.
41. *If he hadn't come to New Zealand, he will stay in Japan.
42. *My car is more faster and more powerful than your car.

43. Joseph flew to Washington to meet the President's advisor.
44. *Joseph wants finding a new job next month.
45. Liao works very hard but earns very little.
46. Japan is a very interesting country.
47. I can cook Chinese food very well.
48. They enjoyed the party very much.
49. *The boys went to bed late last night, is it?
50. *She wanted to know why had he studied German.
51. *He reported his father the bad news.
52. Keiko spoke to the professor's secretary.
53. Liao stayed at home all day and finished the book.
54. Hiroshi found some keys on the ground.
55. They did not come at the right time.
56. If he had bought a ticket, he might have won the prize.
57. Martin says he wants to get married next year.
58. *An accident was happened on the motorway.
59. *Keum lives in Hamilton but work in Auckland.
60. *She likes always watching television.
61. *Did Martin visited his father yesterday?
62. Something bad happened last weekend.
63. *Keum bought two present for her children.
64. She is working very hard, isn't she?
65. *The bird that my brother caught it has died.
66. *The boat that my father bought it has sunk.
67. The book that Mary wrote won the prize.
68. The car that Bill has rented is a Toyota.