

Investigating an Order of Grammatical Difficulty:

A Review of Literature

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Abstract

Although high-stakes tests in Japan include tests of learners' grammatical knowledge, the relative difficulty of different grammatical structures has not been investigated or established yet. The difficulty order of a wide variety of grammatical structures needs to be established in order for language testers to design efficient and reliable grammar tests, since language testers tend to write grammar items based on their intuition or general and vague perception of difficulty of different grammatical structures. The aim of this paper is to show gaps in the literature as a first step in my research that will be conducted for the following purposes: (1) to investigate the difficulty order of different English grammatical structures using multiple-choice items, which are frequently used in high-stakes tests in Japan, (2) to determine the degree to which the difficulty order obtained in a multiple-choice format is in accord with the order predicted by Pienemann's (1998, 2003) processability theory, and (3) to compare the difficulty order with the order in which the grammatical structures appear in junior and senior high school English textbooks approved by the Japanese Ministry of Education (MEXT). The studies reviewed are divided into eight sections: Morpheme Studies, Negatives, Interrogatives, Relative Clauses, Natural Order, Implicit/Explicit Knowledge and Grammatical Difficulty, Implicit/Explicit Knowledge and Processability Theory, and Fill-in-the-Blank Activities and Processability Theory.

Keywords: grammar, difficulty order, multiple-choice test, implicit/explicit knowledge, processability theory

Introduction

In the 1970s, researchers conducted a number of morpheme studies with some studies indicating that the order in which first language (L1) learners of English acquire morphemes was similar regardless of their ages or backgrounds (Brown, 1973; de Villers & de Villers, 1973). Other studies revealed that the order in which second language (L2) learners acquire morpho-syntax was not the same as that reported in the L1 studies but similar among L2 learners regardless of their ages or first languages (Bailey, Madden, & Krashen, 1974; Dulay & Burt, 1973). Researchers also investigated L2 learners' acquisition of particular grammatical structures such as negatives, interrogatives, and relative clauses, and their results seemed to support the idea of a natural acquisition order. These consistent results became the basis of Krashen's (1982) natural order hypothesis and Pienemann's (1984) processability theory, which led to a heated debate over the effects of form-

focused instruction in the 1980s and 1990s.

Communicative language teaching has been popular for approximately three decades, and the role of grammar teaching in the L2 communicative curriculum has been questioned (Purpura, 2004). However, Japanese teachers of English are still teaching grammar in secondary school classrooms to meet students' immediate needs to pass entrance examinations or to get high scores on proficiency tests such as the Test of English for International Communication (TOEIC). This emphasis on grammar is not necessarily problematic where second language acquisition is concerned because, as Pienemann (1984) pointed out, abandoning grammar instruction is "short-sighted" (p.209). He argued that not providing grammar instruction could allow for the fossilization of interlanguages. Researchers such as Seliger (1979) and Lightbown (1985) have claimed that grammar instruction might not be directly related to acquisition, but the rules that are learned explicitly can be used later when the learners are ready to acquire them. In addition, researchers such as Canale and Swain (1980), Larsen-Freeman (1982), Canale (1983), Bachman (1990), and Bachman and Palmer (1996) have included grammatical knowledge as an important component of communicative competence in their models. Developing and measuring learners' grammatical knowledge should not be abandoned because "knowledge is always fundamental to developing a skill" (Haladyna, 1999, p.7), and "[w]hat learners can do with language is to a very considerable extent dependent on what language they know" (Ellis, 2008, p.18). While communicative competence might be the ultimate goal for many teachers and foreign language learners, such competence rests on a linguistic foundation, and grammatical knowledge is a key component of that foundation.

Since the 1960s, a discrete-point, multiple-choice format has been used for many grammar tests. This format has been criticized for lack of authenticity (Purpura, 2004) and the possibility that it can inflate scores due to guessing and test-wiseness (Haladyna, 1999; Purpura, 2004). However, Haladyna (1999) argued that the effects of guessing should not be overrated because the probability of guessing 10 correct answers of 4-option items is about .000000009. Rather, the multiple-choice format has a large number of advantages: easy administration, objective scoring, and high reliability compared to performance-based test formats such as essays (Haladyna, 1999; Purpura, 2004). Although some high-stakes language proficiency examinations such as the IELTS (International English Language Testing System) and the TOEFL (Test of English as a Foreign Language) have eliminated a separate subtest of grammatical knowledge in favor of an integrated-skills test, Purpura (2004) argued that "when grammatical knowledge is fully integrated within a measure of speaking or writing ability and scored holistically for multiple areas of competence, we have no way of disentangling what in the ability to speak and write might be attributed to a knowledge of grammatical forms and meanings" (p.254). Furthermore, it is extremely difficult to elicit authentic language use in an

attempt to elicit specific grammatical structures (Ellis, 2001, 2008). In contrast, the multiple-choice format can test specific grammatical structures and elicit inferences about learners' grammatical ability (Purpura, 2004). Moreover, it is "[t]he most efficient and reliable way to measure knowledge" (Haladyna, 1999, p.39).

Even though high-stakes tests in Japan continue to include tests of learners' grammatical knowledge, the relative difficulty of different grammatical structures has not been investigated or established yet (DeKeyser, 2005; Ellis, 2006). As DeKeyser (2005) pointed out, few researchers have compared the difficulty of a wide range of grammatical structures. Previous researchers have been generally focused on single grammatical categories; thus, the interrelationships among different grammatical structures have been discussed relatively little. For example, although researchers have investigated the acquisition order of certain morphemes, the developmental sequence of negatives, the developmental sequence of interrogatives, and the difficulty order of relative clauses, few researchers have investigated which negative form is acquired before which interrogative form and vice versa. In other words, language testers tend to write grammar items based on their intuition or general and vague perception of difficulty of different grammatical structures, which is obviously unsatisfactory (Ellis, 2001).

Pienemann (1998, 2003) has proposed processability theory in an attempt to predict the acquisition order of a variety of grammatical structures. However, the theory is based on naturally occurring, on-line speech data; thus, the structures covered by this theory are still far from complete because such data often lack sufficient evidence of the acquisition of specific grammatical structures (Ellis, 2008). The theory, for example, does not predict if present perfect tense is more difficult than past tense, which is frequently tested on discrete-point grammar tests. Therefore, a wider variety of grammatical structures that are usually included on grammar tests need to be examined in order for language testers to arrive at an explicit understanding of the empirical hierarchy of difficulty and then to be able to select and write items that reflect those levels of difficulty. In addition, processability theory bases the acquisition order of English structures on ESL data (i.e., Polish and Vietnamese immigrants in Australia). Thus it is necessary to examine if the order applies to EFL data as well.

In sum, the difficulty order of a wide variety of grammatical structures needs to be established in order for language testers to design efficient and reliable grammar tests. Testers can avoid relying on their own intuition or experience of testing when choosing grammatical structures for a grammar test. As Ellis (2001) argued, "Information about the order of acquisition is of obvious relevance to the initial choice of grammatical items" (p.255). However, this idea can be extended to include more than the "initial choice," as it applies equally well to selecting grammar items that are appropriate for intermediate and advanced proficiency learners of English.

These issues have motivated me to conduct a study for the following purposes.

1. The first purpose is to investigate the difficulty order of different English grammatical structures using multiple-choice items, which are frequently used in high-stakes tests in Japan. The dichotomous Rasch model is used to determine the difficulty of each grammatical structure and to construct an empirical hierarchy of difficulty.
2. The second purpose is to determine the degree to which the difficulty order obtained in a multiple-choice format is in accord with the order predicted by Pienemann's (1998, 2003) processability theory. More specifically, I examine to what degree processability theory predicts the difficulty order of grammatical structures that are tested in a multiple-choice format.
3. The third purpose is to compare the difficulty order with the order in which the grammatical structures appear in junior and senior high school English textbooks approved by the Japanese Ministry of Education (MEXT). Although simpler structures seem to appear early and more complex structures seem to appear later in the textbooks, perceived simplicity might not be indicative of the actual degree of difficulty.

The aim of this paper is to show gaps in the literature as a first step in my research. The studies reviewed are divided into eight sections: Morpheme Studies, Negatives, Interrogatives, Relative Clauses, Natural Order, Implicit/Explicit Knowledge and Grammatical Difficulty, Implicit/Explicit Knowledge and Processability Theory, and Fill-in-the-Blank Activities and Processability Theory.

Morpheme Studies

A number of studies have been conducted to investigate the existence of a natural order for the acquisition of grammar. Two of the main reasons for this interest have been because the findings can potentially shed light on an important aspect of second language acquisition, and they can be utilized for designing foreign language curricula (Doughty, 1991). For these reasons, one of the early research topics in the field of SLA was the order of morpheme acquisition.

In the 1970s and 1980s, a number of studies were conducted investigating if there was a consistent order in which first language (L1) learners and second language (L2) learners acquire grammatical morphemes. Brown (1973) conducted one of the earliest and best-known studies in his longitudinal investigation of three L1 children acquiring 14 morphemes. Analyzing their spontaneous speech collected over a four-year period, he found that they acquired the grammatical morphemes in a remarkably similar order. The approximate order of their acquisition was as follows: 1. present progressive *-ing*; 2. preposition *in*; 3. preposition *on*; 4. plural *-s*; 5. past irregular; 6. possessive *'s*; 7. uncontractible copula *be* (e.g., This *is* a cat.); 8. articles *a, the*; 9. past regular *-ed*; 10. third person

singular *-s* (e.g., walks); 11. third person irregular (e.g., has, does); 12. uncontractible auxiliary *be* (e.g., Jones *is* coming.); 13. contractible copula *be* (e.g., She's a good girl.); 14. contractible auxiliary *be* (e.g., She's running.).

A cross-sectional study with L1 children conducted by de Villers and de Villers (1973) confirmed Brown's findings. They looked at spontaneous speech data gathered from 21 children at different ages (from 16 to 40 months old) and found that the order of their acquisition for the 14 morphemes was quite similar to each other's and to Brown's results as well. These findings led researchers to investigate if L2 learners of English would follow the same acquisition order.

The first L2 researchers to investigate this issue were Dulay and Burt (1973), who investigated 151 Spanish-speaking children of five to eight years old from three locations in the United States. The data were collected using the Bilingual Syntax Measure (BSM), which consisted of seven cartoon pictures and 33 questions to elicit natural speech from children. The speech data contained 8 of the 14 morphemes from Brown (1973), and it was found that the overall order of acquisition was similar across the three groups but differed from the L1 order reported by Brown (1973) and de Villers and de Villers (1973). The order of the acquisition for the eight morphemes was as follows: 1. plural *-s*; 2. present progressive *-ing*; 3. contractible copula *be*; 4. contractible auxiliary *be*; 5. articles *a, the*; 6. past irregular; 7. third person singular *-s*; 8. possessive *'s*.

Dulay and Burt (1974) further investigated if different L1 groups would follow the same acquisition order. They compared 55 Chinese-speaking children and 60 Spanish-speaking children of six to eight years old and found that the acquisition orders for both groups were similar. These results suggested that L2 learners acquire certain morphemes in a similar order regardless of their L1.

The results of Dulay and Burt's studies inspired researchers to investigate if adult ESL learners would follow the same acquisition order as child ESL learners. Bailey, Madden, and Krashen (1974) replicated the studies and conducted research on 73 adult L2 learners, 33 Spanish speakers and 40 non-Spanish speakers, who were 17 to 55 years old using the BSM. They found that the orders for Spanish and non-Spanish groups were strikingly similar, and that the orders were very similar to the child ESL order reported by Dulay and Burt (1973, 1974). These findings appeared to confirm that the L2 learners' order of morpheme acquisition was similar regardless of the learner's L1 or age.

Larsen-Freeman (1975) extended these studies and conducted research on 24 adults, six speakers from each four L1 backgrounds (Arabic, Spanish, Japanese, and Farsi) using five tasks: the BSM, a sentence-repetition test, a listening test, a reading test, and a writing test. She found that the accuracy orders were remarkably similar across different L1 groups, and that the orders obtained for the listening, BSM, and repetition tasks were very similar to the order reported by Dulay and Burt. However, these orders were different from the orders for the reading and writing tasks. Some mor-

phemes, such as plural *-s* and third person singular *-s*, rose in the rank on the reading and writing tasks, “thereby ‘disturbing’ the order that was becoming familiar” (Larsen-Freeman & Long, 1991, p.89). This finding showed that different orders possibly existed for oral and written data.

Krashen, Butler, Birnbaum, and Robertson (1978) looked at 70 adults from four L1 backgrounds (Arabic, Persian, Japanese, and Spanish) using writing tasks (i.e., describing cartoons). They examined seven morphemes: present progressive *-ing*, plural *-s*, irregular past tense forms, articles *a* and *the*, third person singular present tense *-s*, contractible copula *be*, and contractible auxiliary *be*. Unlike Larsen-Freeman, they found that the acquisition order obtained for the writing tasks was similar to the results of Bailey, Madden, and Krashen (1974), which was focused on speech. These findings suggested that the acquisition orders of certain morphemes “elicited in natural writing are virtually identical to those observed in oral production” (Dulay, Burt, & Krashen, 1982, p.211).

These studies of L2 learners showed that the acquisition order for certain morphemes, while not the same as the order found in the L1 studies, was strikingly similar irrespective of the learner’s L1, age, and mode of the elicitation tasks (i.e., oral or written). Motivated by the success shown in those early studies, researchers then started to focus on other grammatical structures such as negatives, interrogatives, and relative clauses, and investigated whether those structures would also show common orders of acquisition.

Negatives

Both L1 and L2 learners seemed to pass through systematic developmental stages before they acquired the grammatical rules governing negatives (Bloom & Lahey, 1978; Klima & Bellugi, 1966, for L1 acquisition; Adams, 1978; Butterworth & Hatch, 1978; Cazden, Cancino, Rosansky, & Schumann, 1975; Gillis & Weber, 1976; Milton, 1974; Ravem, 1974; Wode, 1976, for L2 acquisition). The studies on L2 learners covered speakers of Norwegian, Japanese, Spanish, and German, and showed that learners from different L1 background learned to form negatives in a remarkably similar order to that of L1 learners. The first stage of forming negatives was simply placing the negative element (mostly *no* but sometimes *not*) at the beginning of the utterance. Therefore, sentences such as “No go” and “No you playing here” were formed. At the second stage, the negative element was placed inside the utterance. At this stage, *no*, *not* and *don’t* were all used, but *don’t* was used as an unanalyzed unit, so a sentence such as “He don’t can sing” was formed. At the third stage, the correct negative form of *do*, *be*, and modals that suited for the person, number and tense was produced. In other words, the full target rule of negation was acquired, and learners were able to inflect for tense and number, and thus sentences such as “She doesn’t want it” was formed.

Interrogatives

As with negatives, developmental sequences for interrogatives, yes/no questions and Wh-questions, were investigated by both L1 and L2 researchers, and both L1 and L2 learners showed a remarkable consistency in the acquisition order and seemed to pass through four major stages (see Bloom & Lahey, 1978; Klima & Bellugi, 1966, for L1 acquisition; see Adams, 1978; Cazden, Cancino, Rosansky, & Schumann, 1975; Gillis & Weber, 1976; Ravem, 1974; Wagner-Gough, 1975, for L2 acquisition). The studies on L2 learners covered speakers of Norwegian, Japanese, and Spanish, and again revealed that learners from different L1 backgrounds learned to form interrogatives in a remarkably similar order to that of L1 learners. At the first stage, learners simply said a word, phrase, or sentence with rising intonation. Thus, a sentence such as “You like it?” was formed. At the second stage, learners started to produce wh-questions, but they just placed a question word at the beginning, and an auxiliary was often missing. Therefore, a sentence such as “Why you eat it?” was formed. At the third stage, learners were able to use inversion and an auxiliary. However, embedded questions were still difficult for them, and they tended to overgeneralize the inversion rule and form sentences such as “I don’t know when can she come.” Finally at the fourth stage, learners acquired the full target system of interrogatives, and became able to produce yes-no questions, wh-questions, and embedded questions correctly.

Relative Clauses

Unlike the studies of morphemes, negatives, and interrogatives, studies of relative clauses were not inspired by L1 children’s development (Lightbown & Spada, 1993). Although a number of studies have been conducted to investigate L2 learners’ development of relative clauses, most of them were focused on proposing various hypotheses rather than investigating the acquisition order per se. For example, Cook (1973), Schachter (1974), Schachter, Tyson, and Diffley (1976), and Gass (1979) examined relative clauses to investigate the role of L1 transfer. Chiang (1980) investigated the predictors of the frequency of the production of relative clauses. Ioup and Kruse (1977) also studied L2 learners’ relative clauses in terms of L1 transfer, but at the same time they investigated the difficulty order of four types of relative clauses: (1) SS, the head noun is the subject of the matrix sentence and the relative pronoun is the subject of the relative clause, (2) SO, the head noun is the subject of the matrix sentence and the relative pronoun is the object of the relative clause, (3) OS, the head noun is the object of the matrix sentence and the relative pronoun is the subject of the relative clause, and (4) OO, the head noun is the object of the matrix sentence and the relative pronoun is

the object of the relative clause. The results supported Kuno's (1975) hypothesis that OS and OO should be easier than SS and SO.

Kuno's (1975) hypothesis, the perceptual difficulty hypothesis (PDH), predicts that center embedding, which interrupts the processing of the matrix sentence, is perceptually more difficult than right embedding, due to short-term memory limitations. The PDH only examines the location of the relative clause in the matrix sentence but not the function of the relative pronoun in the relative clause. Thus, it does not distinguish OS from OO, or SS from SO.

There are many other hypotheses that predict the difficulty order of relative clause acquisition. Besides the PDH, the noun phrase accessibility hierarchy hypothesis and the SO hierarchy hypothesis are the ones that have received a great deal of attention and support in the literature.

The noun phrase accessibility hierarchy hypothesis (NPAH) (Keenan & Comrie, 1977) is based on the notion of typological markedness obtained through an investigation of relative clause formation strategies in nearly 50 languages. They argued that there is a universal hierarchy in which noun phrase positions can be relativized. The hierarchy, from most accessible to least accessible, is subject (SU) > direct object (DO) > indirect object (IO) > object of preposition (OPREP) > genitive (GEN) > object of comparison (OCOMP). This indicates that if a language allows relativization in a given position in this hierarchy, it also allows relativization in all positions higher (or to the left) in the hierarchy. This hierarchy also has been interpreted as a difficulty order of relative clauses in L2 acquisition: Relative clauses on the subject are the easiest and those on the object of a comparison are the most difficult.

Hamilton's (1994) SO hierarchy hypothesis (SOHH) is a composite of the NPAH and the PDH, and examines the function of the head noun in the matrix sentence and the function of the relative pronoun in the relative clause. It is based on the notion of processing discontinuity (O'Grady, 1987), which is defined in two ways: (1) the discontinuity created in the matrix sentence by the center-embedded relative clause, and (2) the discontinuity created within the relative clause by the *wh*-trace created by relativization. Hamilton explained the second assumption as follows: a relativized subject, such as "The man who_i [_s t_i saw them]", sets up only one discontinuous S, while a relativized object, such as "The man who_i [_s they [_{vp} saw t_i]", sets up two discontinuities, that is, a discontinuous VP and a discontinuous S. The difficulty order is determined by the number of discontinuities, and thus predicts the following order: OS > OO/SS > SO. OS is considered to be the easiest because it contains only one discontinuity. Both the SS type and OO contain two discontinuities and thus are considered of equal difficulty and more difficult than OS. Finally, SO is considered to be the most difficult because it contains three discontinuities.

As described above, different difficulty orders are derived from different hypotheses, and as Izumi

(2003) showed in his summary of previous research, different empirical studies have supported different hypotheses (see Table 1). This might be because different elicitation tasks yield different results (Ioup, 1983). In addition, unlike the foci of the morpheme studies, the use of relative clauses is not necessarily obligatory and can be avoided (Chiang, 1980). In sum, there is not enough evidence of a natural order of development for relative clauses (Ellis, 1985).

Natural Order

As seen above, a number of studies on grammatical morphemes, negatives, and interrogatives have suggested that consistent orders of acquisition are displayed by both L1 and L2 learners of English. In other words, some grammatical features seem to appear in learner's language early while others appear later, and such orders seemed universal. However, the rank orders presented in the morpheme studies were criticized for giving the wrong impression: The items look equally distant from each other even though some of them might differ only slightly and others might be far apart (Dulay, Burt, & Krashen, 1982; Ellis, 1985, 1994; Hatch, 1978). In an attempt to solve this problem, Dulay and Burt (1975) and Krashen (1977) proposed grouping the morphemes that have similar difficulty levels together. Those in a group higher in the order are supposed to be acquired before those in the groups lower in the order. However, no claims were made for the order within the same group. Krashen called it the natural order hypothesis, and argued that language rules are acquired in a predictable order and the order is not affected by instructional sequences. Figure 1 shows Dulay and Burt's order, and Figure 2 shows Krashen's.

Pointing out that earlier researchers investigated only one category within the same grammatical structure, Ioup (1983) examined the L2 learners' acquisition order of various types of subordinate clauses: adverbial clauses, tensed S complements, infinitive complements, gerundive complements, and participle phrases. The participants were 166 adult speakers of Arabic in Egypt and the sentence completion format was used. Ioup found that the tensed subordinate clauses were easier than the non-tensed ones. Table 2 shows the rank order. Within the tensed S complement category, the embedded questions were more difficult than the *that* complements. Within the relative clauses, OO and OS types were more difficult, which contradicted the previous studies. She explained that the difference lies in the difference in the focus of the studies, which was either production errors or sentence processing. The infinitive complements were found easier than the gerundive complements, though she had no explanation for why. Within the infinitive complements, the ones that were extraposed from the subject position, such as "It is easy for us to understand English.", were the easiest, while the purpose complement, such as "He comes here to wash windows every

Table 1. *Summary of Relative Clause Studies in L1 and L2 English*

Study	Participants	Elicitation task	Hypothesis supported
Brown (1971)	L1 children	Aural comprehension	NPAH
Tavakolian (1981)	L1 children	Aural comprehension	NPAH
Romaine (1984)	L1 children	Oral production	NPAH
Roth (1984)	L1 children	Aural comprehension	NPAH
Prideaux & Baker (1986), Experiments 1 & 2	L1 adults	Acceptability judgment	NPAH
Prideaux & Baker (1986), Experiments 4 & 5	L1 adults	Written sentence comprehension, written recall, written video narration	NPAH & PDH
Bates, Devescovi, & D'Amico (1999)	L1 adults	Written sentence interpretation	NPAH & PDH
Cook (1973)	L1 children	Oral imitation & L2 adults	PDH
Ioup & Kruse (1977)	L2 adults	Grammaticality judgment	PDH
Gass (1979, 1980, 1982)	L2 adults	Written sentence combination	NPAH
Schumann (1980)	L2 adults	Speech production	PDH
Ioup (1983)	L2 adults	Written sentence combination	neither PDH nor NPAH
Pavesi (1986)	L2 adults	Oral picture-cued production	NPAH
Eckman, Bell, & Nelson (1988)	L2 adults	Written sentence combination	NPAH
Doughty (1988, 1991)	L2 adults	Written sentence combination, grammaticality judgment, oral picture cued-production	NPAH
Wolfe-Quintero (1992)	L2 adults	Guided oral production	NPAH
Hamilton (1994)	L2 adults	Written sentence combination	SOHH

Note. Adapted from "Processing Difficulty in Comprehension and Production of Relative Clauses by Learners of English as a Second Language" by S. Izumi, 2003, *Language Learning*, 53, pp. 293–294.

month.", was the most difficult, which could be because *a for + gerund* could be used to express purpose. Within the participle category, the passive forms were difficult. Of the gerundive complements, which are more difficult than the infinitive complements, the three most difficult items on the test required the learners to choose the right preposition and a gerund form such as "They were prevented *from taking it*." She also found that the placement of the adverb *always* made the item "I am tired of her *always asking for money*" difficult, though the learners had little difficulty in placing the adverb *always* in a simple sentence "They *always call* on Sunday."

Ioup (1983) also briefly looked at three sentence categories, adjective, adverb, and preposition, which were elicited from the test used, and found that prepositional phrases were the most difficult.

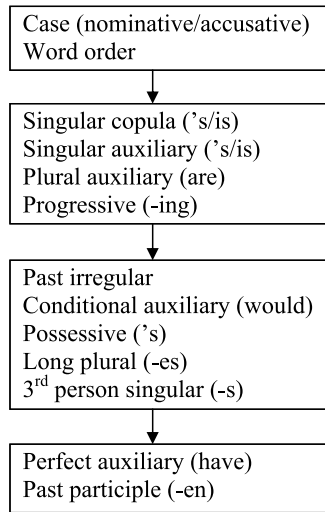


Figure 1. Dulay and Burt's (1975) acquisition hierarchy. Adapted from "Strategies of child second language acquisition" by H. C. Dulay and M. K. Burt, 1975, In D. P. Dato (Ed.), *Developmental Psycholinguistics: Theory and Applications*, p.225.

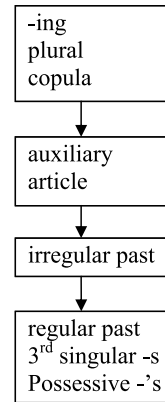


Figure 2. Krashen's (1977) natural order. Adapted from "Some issues relating to the monitor model" by S. D. Krashen, 1977, *On TESOL '77*, p. 149.

Table 2. Rank Order of Difficulty of the Six Subordinate Clauses

1.	Adverbial clause (easiest)	
	↓ NS	
2.	Tensed S comp	
	↓ NS	
3.	Relative clause	
	↓ NS	
4.	Infinitive comp	
	↓ $p < .05$	
5.	Participle phrase	
	↓ $p < .05$	
6.	Gerundive comp (most difficult)	

Diagrammatic annotations: A bracket on the right side connects the level of 'Adverbial clause' to the level of 'Relative clause', labeled $p < .05$. A bracket on the left side connects the level of 'Tensed S comp' to the level of 'Infinitive comp', labeled $p < .05$.

Note. Adapted from "Acquiring complex sentences in ESL" by G. Ioup, 1983 in K. M. Bailey, M. H. Long, & S. Peck (Eds.), *Second Language Acquisition Studies*, p. 46.

Within the category of preposition, the indirect object *to* and the possessive *of* were much easier than *on* + place, *in* + time, or *with* + manner. She argued that *on*, *in*, and *with* have a variety of functions, and also place, time and manner can be expressed in various ways, which must have caused more difficulty. Within the adjective category, the use of inflected form such as "The doctor looked at the *infected* leg" was the most difficult.

Ioup (1983) then related the difficulty found above to different proficiency levels, high, high inter-

mediate, low intermediate, and low, to examine where particular forms are acquired. Adjectives and adverbs mostly seemed to be acquired at the lower intermediate level. The preposition for indirect object *to* and possessive *of* also seemed to be acquired at the lower intermediate level, while other semantic prepositions needed attention until the advanced level. Infinitives with extraposition from the subject (e.g., “It is easy for us *to understand* English”) were acquired at the low intermediate level, object complement types (e.g., “Her sister persuaded her *to buy* a new car”) were acquired at the high intermediate level, and the purpose complement (e.g., “He comes here *to wash* windows every month”) still needed attention at the advanced level. Participle phrases (e.g., “We have a map clearly *showing* this street”) were difficult through the high intermediate level. Gerundive complements (e.g., “He has a funny habit *of talking* to himself”) were mostly difficult throughout. Adverbial clauses, relative clauses, and the tensed complements seemed to be acquired at the low intermediate level.

Comparing these findings with the L1 data from Limber’s (1973) study, Ioup (1983) concluded that the results were consistent in both the L1 and L2, and if there were differences, they must be from the differences in the elicitation tasks used.

Implicit/Explicit Knowledge and Grammatical Difficulty

Ellis (2006) investigated the difficulty of 17 grammatical structures, though he seemed more interested in the difference between two types of knowledge rather than the difficulty order per se. He suggested distinguishing “two senses of ‘difficulty’ depending on whether we are referring to what is easy/difficult to ‘acquire’ as *implicit knowledge* or to ‘learn’ as *explicit knowledge* of a second language” (p.432). Ellis (2001) defined implicit and explicit knowledge as follows:

Implicit knowledge is the knowledge of a language that is typically manifest in some form of naturally occurring language behavior, such as conversation. It has two major characteristics: it is intuitive and it can be rapidly processed. Explicit knowledge is knowledge about a language. Two types of explicit knowledge can be distinguished. Explicit knowledge in the form of meta-language consists of knowledge of the technical and semi-technical terms for describing a language. Explicit knowledge in the form of analysed knowledge involves an awareness of linguistic form and of form-function mappings which can exist independently of whether learners possess the metalanguage needed to verbalise their knowledge. Explicit knowledge, in contrast to implicit knowledge, is accessed only slowly. Even fully automatised explicit knowledge cannot be accessed as rapidly as implicit knowledge (p.252).

It is the development of implicit knowledge rather than explicit knowledge that is regarded as the indication of L2 acquisition (Ellis, 2001, 2006, 2008).

Explicit knowledge has been typically operationalized as learners' ability to verbalize rules (e.g., Bialystok, 1979; Green & Hecht, 1992; Hu, 2002; Hulstijn & Hulstijn, 1984; Macrory & Stone, 2000; Seliger, 1979; Sorace, 1985). Along with rule-verbalization tasks, grammaticality judgment tasks, error-correction tasks, and gap-filling tasks have often been used to elicit explicit knowledge. On the other hand, researchers have used various tasks to elicit implicit knowledge. Hulstijn and Hulstijn (1984) used a story-retelling task, and Sorace (1985) used a picture-description task and an interview. Macrory and Stone (2000) used a writing task and an interview, and Hu (2002) used a spontaneous writing task. Green and Hecht (1992), however, used an error-correction task, which is often used to elicit explicit knowledge. Likewise, Bialystok (1979) claimed that grammaticality judgment tasks elicit learners' implicit knowledge.

Ellis (2009) argued that a spontaneous production task should be the best measure of implicit knowledge, but he also admitted that it cannot exclude the possibility of learners' use of explicit knowledge. Likewise, tasks for eliciting explicit knowledge, such as grammaticality judgment tasks and gap-filling tasks, could be completed by using implicit knowledge. In other words, none of the tasks used in previous studies can be considered a pure measure of implicit/explicit knowledge (DeKeyser, 2003).

DeKeyser (2003) argued that certain grammatical structures are easier to acquire as implicit knowledge while others are easier to learn as explicit knowledge. Ellis (2006) investigated if there were grammatical structures that were easy to acquire as explicit knowledge but difficult to acquire as implicit knowledge, and vice versa, and whether implicit/explicit knowledge would predict L2 proficiency. A total of 229 learners of English participated: 147, most of whom were Chinese, were studying in either a language school or a university in New Zealand, 28 were studying at a university in Tokyo, and 54 were studying in a TESOL program in Malaysia. Seventeen structures were chosen as representative of a typical syllabus from all proficiency levels: verb complement (*to* vs. *-ing*), third person *-s*, plural *-s*, indefinite article, possessive *-s*, regular past tense *-ed*, yes/no questions, comparative, unreal conditionals, modals, ergative verbs, embedded questions, adverb placement, question tags, *since/for*, dative alternation, and relative clauses. They were also chosen because they were problematic features for learners, but their production errors were easily identifiable. Four tests were used: oral imitation and the timed grammaticality judgment tests for measuring implicit knowledge, and untimed grammaticality judgment and the metalinguistic knowledge tests for measuring explicit knowledge. The time allowed for the timed grammaticality judgment test was determined on the basis of native speakers' average response time plus 20% (i.e., 1.8 to 6.24 seconds per

item). Scores of the International English Language Testing System (IELTS) were also used as the measure of language proficiency. Ellis found that verb complement, possessive -s, modals, adverb placement, and relative clauses were easy when scored using the implicit knowledge test, while the indefinite article, unreal conditionals, and question tags were difficult. For the explicit knowledge, plural -s, indefinite article, possessive -s, regular past tense, and relative clauses were easy when scored using the explicit knowledge test, while adverb placement, ergative verbs, and unreal conditionals were difficult. He also found that verb complement, yes/no questions, modals, and ergative verbs were almost the same difficulty for both types of knowledge, while the indefinite article, question tags, plural -s, 3rd person -s, regular past tense, *since/for*, and relative clauses were markedly easier on the explicit knowledge test. The results suggested that structures that were easy to acquire as implicit knowledge could be difficult to acquire as explicit knowledge, and vice versa. In addition, by correlating the IELTS scores with the implicit/explicit scores, Ellis found that both implicit and explicit knowledge were significantly associated with a measure of general language proficiency. He, therefore, concluded that both types of knowledge are important in language learning.

Implicit/Explicit Knowledge and Processability Theory

Ellis (2008) then investigated if “experimentally elicited data can provide valid measures of learners’ implicit knowledge” (p.5) using the data of his 2006 study. For that purpose, he compared his data with the difficulty order predicted by Pienemann’s (1998, 2005) processability theory, which was derived from naturally occurring speech data. Ellis hypothesized that the theory, which predicts the acquisition order in relation to speech production, would successfully predict learning difficulty as implicit knowledge rather than as explicit knowledge.

Processability theory attempts to explain/predict the acquisition order of L2 grammatical structures in terms of psychological constraints, such as working memory and word access. It assumes that “[a]t any stage of development, the learner can produce and comprehend only those second language (L2) linguistic forms that the current state of the language processor can handle” (Pienemann, 2007, p. 137). Pienemann (1998, 2003) proposed five processing procedures in terms of the exchange of grammatical information. They are implicationaly ordered: Each procedure is a prerequisite for the next one. The five procedures are (a) the word/lemma, (b) the category procedure, (c) the phrasal procedure, (d) the S-procedure, and (e) the subordinate clause procedure. He then added the notion of perceptual saliency and established six stages: (a) the word/lemma, (b) the category procedure, (c) the phrasal procedure, (d) the S-procedure + saliency, (e) the S-procedure—saliency, and (f) the subordinate clause procedure. Note that he later relabeled the phrasal procedure as the NP

procedure, the S-procedure + saliency as the VP procedure, and the S-procedure—saliency as the S-procedure, but here the original version, which Ellis (2008) referred to, is discussed here.

At the first stage, the word/lemma, learners can access and produce only words and learned chunks such as “I don’t know.” At the second stage, the category procedure, learners can identify the lexical categories such as nouns and verbs, and arrange words following the canonical word order, SVO. They can also produce morphemes such as past tense *-ed* and plural *-s*, which do not require any exchange of information beyond word boundaries. At the third stage, the phrasal procedure, learners can identify the beginning and the end of a string utilizing the perceptual saliency principle, and thus can move an element at the end to the beginning and vice versa. One example is adverb-fronting such as in “I went yesterday” and “Yesterday I went.” Learners can also handle the exchange of information within a noun phrase, and thus acquire plural agreement as seen in “many boys,” in which the information of number (i.e., plural) is unified between an article and a noun. At the fourth stage, the sentence procedure with perceptual saliency, learners can exchange information between elements if the position of one element is salient. Thus they can produce yes/no-inversion and copula-inversion, which is the inversion of the subject and a be-verb in wh-questions such as “Where is John?” Copula-inversion is interpreted as moving the subject to the final position utilizing perceptual saliency. Learners also acquire tense agreement, which requires the exchange of information between the auxiliary such as “has” and the participle such as “seen.” At the fifth stage, the sentence procedure without perceptual saliency, learners can invert the subject and the auxiliary in wh-questions and thus produce sentences such as “Where did you go?” and “What is she eating?” They can also exchange the information across phrasal boundaries, and thus acquire subject-verb agreement. At the final stage, the subordinate clause procedure, learners can distinguish between the main clause and the subordinate clause. Thus they can apply different operations to the subordinate clauses and produce embedded questions without the subject-auxiliary inversion.

Processability theory is focused on emergence of a structure rather than mastery. According to Pienemann (1984):

The main purpose is not to describe the point in time during the process of language development when a structure is *mastered* (in terms of correct use of target norms), because this is only to pinpoint the *end* of the acquisition of a certain structure. Rather, the above criterion is intended to define the *first systematic use* of a structure, so that the point in time can be located when the learner has—in *principle*—grasped the learning task (p. 191).

Later Pienemann (1998) redefined the emergence criterion as “sufficient contexts and at least

one rule application” (p. 146), and cited four as the number of contexts required.

Ellis (2008) looked at the five processing procedures (not six stages) of processability theory and chose four structures out of the 17 structures available from the previous study that seemed to represent each of the procedures: possessive -s for the category procedure, *since/for* for the phrasal procedure, third person -s for the S-procedure, and question tags for the subordinate clause procedure. The scores on the oral imitation test were used as the measure of implicit knowledge, and the scores for the ungrammatical sentences of the untimed grammaticality judgment test were used as the measure of explicit knowledge. Implicational scaling showed that the scores on the implicit knowledge accorded with the hierarchy defined in processability theory, but the scores on the explicit knowledge did not. He thus claimed that “the data obtained from the Oral Imitation Test proved comparable to the unplanned language use data that Processability Theory have traditionally collected” (Ellis, 2008, p. 16) and concluded that the oral imitation test used in this study would be an appropriate test to elicit learners’ implicit knowledge.

Fill-in-the-Blank Activities and Processability Theory

Although processability theory is based on naturally occurring speech data and thus involves “automatic processing,” Baten (2011) used fill-in-the-blanks activities, which involve “conscious processing,” to investigate if the German cases (i.e., nominative, accusative, and dative) are acquired in the order predicted by processability theory. A total of 704 students in Flanders, who were studying German as a foreign language, participated in the study: 203 participants were in the tenth grade, 248 in the eleventh grade, and 253 in the twelfth grade. Tests with fill-in-the-blanks items were administered near the end of each grade. Baten found that the students’ development was in line with processability theory. First, the learners used the default nominative case (stage 1 in processability theory). Second, they started to show the awareness of obliqueness (stage 2). Third, they differentiated the accusative from the dative in prepositional phrases (stage 3). The distinction of the accusative from the dative in noun phrases seemed to emerge much later (stage 4).

Baten (2011) claimed that he used fill-in-the blanks items because such items could “supply case contexts, which are normally less frequent in the learners’ language” (p. 29). Noticing that such items can activate more conscious processing and less automatic processing, he made the tests time-constrained in the hope of predominantly activating automatic processing. However, he did not mention how much time was allowed for each item.

Conclusion

After the morpheme studies, most of the studies on grammar difficulty were mainly focused on single grammar points such as negatives, interrogatives, and relative clauses. Although Ioup (1983) and Ellis (2006, 2008) compared a number of different grammatical structures, Ioup only looked at six types of subordinate clauses, and Ellis focused on the difference between the implicit and the explicit knowledge rather than the difficulty of each structure per se, and the interrelationships among different grammatical structures were not discussed. Processability theory predicts the difficulty order of different grammatical structures, but it is based on ESL learner data and not on EFL learner data. Also previous researchers who tried to verify the assumption of processability theory mostly used speech data. Baten (2010) analyzed data gathered with fill-in-the-blank items, but only examined German cases.

Thus the first gap to be addressed is the lack of empirical evidence establishing an order of difficulty for a wide range of grammatical structures in English. The use of relatively few grammatical structures means that the difficulty of most structures is unknown.

The second gap is that nothing is known about the degree to which the difficulty order of the grammatical structures tested in a multiple-choice format is in accord with the order predicted by processability theory.

The third gap is primarily pedagogical. Currently, nothing is known about the degree to which the order in which grammatical structures appear in junior and senior high school textbooks in Japan are in accord with the empirically validated order found in this study. Large differences might indicate that the textbook order is not optimal in terms of learnability.

Further research will be conducted in an attempt to fill these gaps. I hope that the results of the study will contribute to the field of second language acquisition and grammar testing. As DeKeyser (2005) pointed out, "Relatively few studies have actually attempted a systematic empirical investigation of difficulty by comparing acquisition for a broad range of language structures" (p.11). I also hope that the study will provide implications for decision making in educational institutions. Knowledge of the order of grammatical difficulty can be used to select grammar items for tests, identify a learner's current stage of development, and plan more efficient curriculums.

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文法項目別難易度の研究：

文献レビュー

西 谷 敦 子

要 旨

日本では入学試験や能力検定試験などにおいて英文法のテストが実施されているが、英文法の項目ごとの難易度はいまだ確立されていない。言語テストの問題作成者はそれぞれの文法項目の難易度に対する一般的かつ漠然とした認識に基づいて文法問題を作成することが多く、効果的かつ信頼性のあるテストを作成するためには、様々な文法項目の難易度を確立する必要がある。この論文は、(1) 多肢選択式問題での文法の項目別難易度の検証、(2) その難易度と Piennemann の処理可能性理論との相違の検証、及び (3) その難易度とそれらの文法項目が日本の中学・高校の教科書に現れる順位との相違の検証、を行なう研究の第一段階として、先行研究におけるギャップを明らかにしようとするものである。対象となった研究は、形態素研究、否定文、疑問文、関係詞節、自然順序説、暗示的・明示的知識と文法難易度、暗示的・明示的知識と処理可能性理論、穴埋め問題と処理可能性理論の8グループである。

キーワード：文法、難易度、多肢選択式問題、暗示的・明示的知識、処理可能性理論