

The Lexical Morpheme Acquisition of a Learner of English as a Second Language

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The present study aims to examine the acquisition of English lexical morphemes - i.e. past -ed marker and plural -s marker on nouns, in L2 (second language) English within the framework of Processability Theory (henceforth PT). The participant of this research was LE, an Indonesian learner learning English as L2 in an instructional context. The data in the form of essay written by LE was collected longitudinally at four points in time during the period of four months. Based on the data, a distributional analysis was carried out, and then the findings were analysed by using the implicational scaling in accordance with the emergence criterion in order to determine the points of acquisition of the two morphological forms under scrutiny. The research finding indicates that the acquisition points of the lexical morphemes appear to follow PT's predictions, where the emergence point of past -ed marker and plural -s marker occurred at comparatively the same point in time as hypothesised in PT. Moreover, the finding of this research reveals that the predictions of PT seem to be followed in L2 written English; it indicates PT's capacity to account for morphological acquisition in both written and spoken language production.

Keywords: processability theory, L2 acquisition, lexical morpheme

Tujuan penelitian ini melihat pemerolehan morfem leksikal bahasa Inggris, yaitu penanda lampau -ed dan penanda jamak -s pada bahasa Inggris sebagai bahasa kedua dengan menggunakan kerangka Processability Theory (PT). Partisipan penelitian adalah LE, pelajar Indonesia yang sedang belajar bahasa Inggris dalam konteks instruksional. Data dalam bentuk esai dikumpulkan selama empat bulan. Hasil penelitian ini menunjukkan pemerolehan morfem sesuai pola prediksi PT, dimana penanda lampau dan jamak terjadi secara berbarengan pada waktu yang sama.

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INTRODUCTION

The field of second language acquisition (SLA) has developed as an independent and autonomous field of study since the last four decades, and various disciplines such as linguistics, education and psychology have played an important role in informing approaches in SLA research (Saville-Troike, 2006). Processability Theory (PT), which was developed by Manfred Pienemann, is one of the current mainstream theories in SLA which has attracted attention among researchers (VanPatten & Williams, 2007).

PT is a theory of second language acquisition, and as the name of the theory suggests PT focuses on language processing, particularly on the processing of output of L2 (second language) linguistic forms (VanPatten & Benati, 2007). The logic underlying the theory is explained by Pienemann (2008) as the following: the L2 learner produces and comprehends only linguistic structures which can be handled by the current state of the language processor. Consequently, understanding the architecture of the language processor and how it handles a second language is considered very important; for it would help one to be able to predict the course of the development of linguistic forms in L2 learner's interlanguage.

The key assumptions of language processing in PT are as follows (Pienemann, 2003): (a) autonomous language processing: the processing component, e.g. the procedure to construct a phrase, is relatively autonomous, and its operation is mostly automatic, suggesting that the execution of the procedure is not generally under conscious control. This occurs as a result of the high speed at which language processing takes place. (b) Incremental language processing: there is a gradual construction of surface lexicogrammatical form during the on-going conceptualization. (c) Linear output: the output of the processor is linear, but its mapping onto the underlying meaning may not occur linearly, known as the linearization problem, which applies to the mapping of conceptual structure onto linguistic form, as well as to morphosyntactic structure generation. (d) Grammatical memory store access: grammatical processing has access to a grammatical memory store; the need for this is due to the linearization problem and the automatic and incremental characteristics of language generation.

PT has as its core a universal processability hierarchy; this hierarchy is based upon the concept of grammatical information transfer within and between the phrases of a sentence (Pienemann, 2008). The following is an overview of the hypothesised processability hierarchy:

1. No procedure (e.g., single word utterances)
2. Category procedure (e.g., adding a plural morpheme to a noun)
3. Noun phrase procedure (e.g., matching plurality as in 'several questions')
4. Verb phrase procedure (e.g., movement of elements within a verb phrase)
5. Sentence procedure (e.g., 3sg –s subject–verb agreement)
6. Subordinate clause procedure (e.g., use of a particular tense based on something in the main clause) (Pienemann, 2007, p. 140).

Pienemann (2008) argues that the linguistic development of L2 learners follows the hierarchy due to the reasons that language development is implicationaly ordered, that is, the

lower level procedure is requisite for the procedure of a higher stage, and that it represents the time-course in language generation. It is therefore hypothesised that for learners, for instance, currently at the phrasal level or stage three of the L2 processing procedure, they should have developed the processing procedures of stages one and two, since both of the lower levels are a necessary prerequisite for that stage. For example, in order for learners to produce the noun phrase *several questions*, the procedure to construct the noun phrase needs to have developed in the L2 processing system. In the above example, the grammatical information ‘plural’ is contained in the determiner *several* and in the noun *questions*. If the learner still has not developed the stage-three processing procedure, the mismatch will not be identified and the exchange of grammatical information within the phrase cannot be processed. As a result, it is highly likely that the learner constructs such a phrase as *several question* which is ungrammatical, where the head noun *question* is not marked for ‘plural’.

Recent years have seen growing interests among second language researchers to investigate L2 learners’ interlanguage development based on the framework of PT. Given its universal nature, second language researchers have conducted empirical studies in order to test interlanguage developmental trajectory of various morpho-syntactic phenomena as predicted by PT to a range of typologically distant languages such as Arabic (e.g. Al Shatter, 2008), Chinese (e.g. Zhang, 2005), English (e.g. Yamaguchi, 2008), French (e.g. Agren, 2008), and Japanese (e.g. Kawaguchi, 2005).

Concerning the application of this theory to English as a second language, Pienemann (1998) tested the predictions of PT on the acquisition of L2 English morphological and syntactic structures against cross-sectional data from two empirical studies - i.e. Johnston’s (1985) study of adult learners of L2 English and Pienemann and Mackey’s (1993) study of child learners of L2 English. Regarding the study by Johnston, the data in the form of spoken corpus containing 60,000 words was gathered by means of an interview lasting 40 to 60 minutes, which involved 16 individual participants, who are Polish and Vietnamese adult immigrants in Australia. With regard to the study by Pienemann and Mackey (1993), the data in the form of oral samples produced by 13 young learners of L2 English aged 8 to 10 years was collected by using a number of communicative tasks. The data analyses which were carried out in the two studies were based on the criterion of emergence-based acquisition. The results of the tests conducted by Pienemann in both studies show that the scalability of the implicational table is 100%, which reveals that the evidence found does not contradict the hypothesised implicational pattern, meaning that the two studies strongly support the developmental sequences predicted by PT (Pienemann, 1998).

Since the early two studies on L2 English morpho-syntactic forms, the number of subsequent PT-based research studies focusing specifically on English morphemes has, however, been relatively few (see e.g. Dao, 2007; Yamaguchi, 2009). Moreover, most of the studies on the acquisition of L2 English morphology under PT which have been carried out to date are cross-sectional, where data gathering from the participants was carried out at one single point in time. One recent study which investigated the L2 acquisition of particular English morphemes in

which data was collected longitudinally is Yamaguchi's (2009). In what follows I will review this empirical study by Yamaguchi.

The study was a longitudinal case study of a learner acquiring English in an English L2 context. In the study, the focus was on the acquisition of English plural marker *-s* on nouns and NP (noun phrase) plural agreement of a Japanese L1 child learner learning English as a second language, within the PT framework. The study addressed the question whether the acquisition of plural marking *-s*, which belongs to the stage-two procedure, emerges in the learner's interlanguage prior to the acquisition of NP plural agreement, belonging to the stage-three procedure, as predicted by PT.

The research participant was Kumi, a daughter of Japanese native speaker parents who immigrated to Australia when she was five years old. The collection of data in the form of recorded speech production was conducted longitudinally over the period of two years, that is, from the time Kumi was 5 years 8 months old until she was 7 years 8 months. The data was collected fortnightly for the first two months, bimonthly for the rest of the first year, and every three months for the second year. There were 14 meeting sessions in total with the participant, with each of the sessions lasting approximately 20-30 minutes. The oral production samples were gathered by means of various tasks, including semi-structured interviews, narratives and communication games. After transcribing the oral data, Yamaguchi carried out a distributional analysis of the morphological forms under investigation. At the last stage of data analysis, the emergence criterion was applied to find out whether or not the learner had acquired the target linguistic forms.

The result of Yamaguchi's research indicates that the learner's acquisition of the English morphological forms was implicational, i.e. lexical procedure > phrasal procedure, thus consistent with the developmental sequence as predicted in PT. The learner first acquired plural marker *-s* on nouns, which belongs to stage 2 (i.e. lexical procedure), and after that she acquired NP plural agreement, which belongs to stage 3 (i.e. phrasal procedure). On the basis of her research findings, Yamaguchi (2009) argues that both cross-sectional data and longitudinal data appear to support the English processability hierarchy for morphological plural marking.

Given that her case study was the first attempt to longitudinally investigate English L2 plural marking within PT, Yamaguchi states that more longitudinal PT-based research to further examine the developmental sequence of the morphological structures is required in order to provide more evidence for the predictions made by PT.

There were two major rationales for the undertaking of this present study, namely the focus of research on the written production of English as a second language and the longitudinal approach for data collection. With regard to the first reason – i.e. the focus of the research on production of written English, a great deal of research under PT has so far been oriented on spoken language production (Rahkonen & Håkansson, 2008). Nevertheless, L2 written production has recently started to be researched within the framework of PT, for example, research conducted by Håkansson and Norrby (2007), Rahkonen and Håkansson (2008), and Ågren (2009). The results of the research indicate that PT seems capable to account for the

acquisition of L2 morphology in spoken as well as written language production. In other words, it can be argued that the PT hypotheses can be tested against data of written language, which accordingly invites further research in the field. The need for this research, therefore, stems from the fact that there have been limited PT-based longitudinal studies focusing specifically on written production of L2 English.

The other reason for this research is concerned with the longitudinal approach, which means that the research data is collected from the research participant over a prolonged period of time, the purpose of which is to gather information about change over time. Dörnyei (2007) states that “the salience of development and change highlights the significance of longitudinal research” (p. 78); accordingly, it is strongly argued that the longitudinal research design is most suitable for research within a transition theory such as PT which focuses on the developmental course of language over time (Pienemann, 2007). Moreover, Ortega and Iberri-Shea (2005) assert that since second language learning is a process happening through and over time, investigations of most L2 learning problems can be interpreted in a more meaningful way with a full longitudinal perspective. Despite the theoretical centrality of time in second language research, the longitudinal approach still does not appear to receive adequate attention from second language researchers, which can be seen from the fact that the number of such research studies to date is still far fewer as compared to cross-sectional ones (Dörnyei, 2007).

With regard to the selection of two morphemes, i.e. English plural *-s* and past *-ed* markers, for this study, the decision is principally based on the following reason – i.e. the need for a more detailed analysis within the PT framework on the emergence points of English plural *-s* and past *-ed* markers in L2 learner’s interlanguage. According to PT, the two morphemes emerge in L2 learner’s interlanguage at comparatively the same point in time; therefore, this present research aims to examine whether the acquisition of the two lexical morphemes occurs as predicted by the theory.

To sum up, given that the number of PT-based research specifically studying L2 English morphemes to date is still limited, and virtually all of them are cross-sectional, this longitudinal research can therefore be seen as another novel attempt to further investigate the L2 English morphological development. This research, unlike Yamaguchi’s longitudinal case study which examined oral language production of a child learner, focused on the analysis of written language data produced by an adult learner learning L2 English in an instructional context, i.e. learning English formally as a foreign language in her native country.

METHODS

This study investigated the main research question: does the acquisition of lexical morphemes – i.e. *past -ed* marker and *plural -s* marking follow the sequence predicted in PT? The design of this present research was in the form of longitudinal case study, involving one Indonesian adult learner learning English in an instructional context. The participant of this research, henceforth referred to as LE, was a first-year university student doing her undergraduate degree in English. Her formal learning of English as a foreign language started when she was in grade four of

primary school; thus, she had been learning English for about eight years when she started her undergraduate degree programme at university.

In this longitudinal study, the research subject was followed for four months. The data was in the form of personal narrative essay which was collected longitudinally at four points in time with approximately one month interval – i.e. month 1 of LE's first year at university, month 2, month 3 and month 4. The selection of personal narrative essay was based on the reason that this text type was expected to provide relevant data of the grammatical forms that this present study examined, particularly the past –ed and plural –s lexical morphemes.

In order for LE to write the essays, one topic was provided in each session with four topics in total; they were general topics and were related to LE's everyday life. Considering that the participant was not used to writing essays in English in her real life except in particular occasions such as in class, it was expected that the familiar topics would give her motivation to write and avoid the risk that she would be unable to write the assigned essays because of the unfamiliarity of topics. Another reason for setting up the particular topics was that it would assist me to understand the contents of LE's writings more easily. For each writing task, the participant was required to write a text of approximately 150-200 words in length. The time allocated for the subject to do the task in each session was approximately 30 minutes, which was expected to give her an adequate amount of time to complete it.

In the field of second language research, the formulation of acquisition criteria is seen as crucial in order to enable researchers to make replicable and falsifiable claims about the orders of emergence of different linguistic forms in an interlanguage (Pallotti, 2007). The acquisition criteria commonly used in SLA research are based on L2 accuracy norms, with the emphasis of the criteria being on comparing learner production with the target language (Ågren, 2009). Pienemann (1984), however, argues that the formulation of acquisition criteria should not be based on accuracy measures but should instead be based on the first emergence of a structure – i.e. the first systematic uses of the linguistic structure. Following the research studies conducted within the framework of PT, the analysis of L2 morphological forms in this research was also based on the emergence criterion.

The emergence criterion adopted in this project was based on Zhang (2005), i.e. the evidence for the emergence of the grammatical structures in the learner's developing IL (interlanguage) system can be derived from the presence of at least three tokens in lexically varied contexts. Zhang (2005) argues that using such a criterion would result in a reduction of chances of mistaking morphemic chunks for productive occurrences.

The procedure of data analysis for testing the PT's predictions on the acquisition sequence of the grammatical forms under scrutiny is described as follows. After the coding of the raw data by using the CorpusTool, a linguistic annotation tool, according to the established coding schemes, the finding was then summarised in a distribution table. At the next stage of analysis, the quantitative data were analysed by means of the implicational scale according to the emergence criterion in order to determine the learner's interlanguage acquisition sequences of the linguistic features in question according to the hypothesised processability hierarchy.

FINDINGS AND DISCUSSION

The finding of the distributional analysis of the lexical morphological structures under scrutiny – namely past *-ed* marker and plural *-s* marker, are presented in Table 1 below. The first row shows the different points in time (i.e. T1, T2, T3 and T4) in the corpus, while the far left column shows the hypothesised morphological forms.

Table 1. Distributional analysis of LE's morphological acquisition

Lexical morphemes	T1	T2	T3	T4
Past <i>-ed</i> marker	1 / 14 .07	2 / 21 .09	11 / 29 .38	13 / 19 .68
Plural <i>-s</i> marker	1 / 3 .33	2 / 5 .40	4 / 5 .80	4 / 10 .40

The result of distributional analysis as shown in the table above indicates that there was only 1 positive instance of past *-ed* marker which was found in LE's writing in Time 1 of data collection, even though there were 14 obligatory contexts for this linguistic form. The same case was also found with plural *-s* marker; out of 3 obligatory contexts, LE could only supply 1 positive instance of this lexical morpheme.

As for Time 2, in spite of the finding that the two morphological forms – i.e. past *-ed* marker and plural *-s* marker, started to develop in the subject's interlanguage in that point of time, which was indicated with an increase in the number of positive instances produced by LE, the two occurrences of positive instances were still considered insufficient; for there should be at least 3 positive instances in lexically varied contexts before a grammatical structure can be considered as having been acquired (Zhang, 2005).

The first point of emergence for both morphological forms in the subject's interlanguage was found to occur in month 3, at which time LE started to steadily supply past *-ed* marker and plural *-s* marker in her writing. At this point of time, out of 29 obligatory contexts for past *-ed* marker, the subject successfully supplied 11 positive instances of this form. A similar emergence pattern was also observed for plural *-s* marker, where, out of 5 obligatory contexts for this morphological structure, 4 positive occurrences were found in LE's L2 written production.

Time 4 reveals a similar pattern to Time 3, considered the first emergence point; the occurrences of positive instances of past *-ed* marker showed a steady increase (i.e. 13 occurrences of suppliance out of 19 obligatory contexts), while for plural *-s* marker there was the same number of occurrences as in Time 3 (i.e. 4 positive instances) found in LE's production of English L2.

This finding indicates the emergence of the two morphological forms in the subject's interlanguage is implicational as illustrated in Table 2 below. That is, they follow the stages predicted in PT. According to Hatch and Lazaraton (1991), for the scale to be considered 'valid', the coefficient score should be at least .90. The calculation of the scalability (or reproducibility)

of the implicational scale following Pienemann (2011) shows that the coefficient score of the participant in this research is 1 (i.e. no cell in the table deviates from the prediction); it means the implicational scaling table is a valid implicational table.

Table 2. Implicational scaling of LE's acquisition

Lexical morphemes	Time 1	Time 2	Time 3	Time 4
Past –ed marker	-	-	+	+
Plural –s marker	-	-	+	+

Note: “+”= acquired, “-“= not acquired

As shown in the table above, according to the emergence criterion, both types of lexical morphemes were not found to have been acquired by the subject at the first two points of time (i.e. Time 1 and Time 2). The first systematic use of the two morphological forms as shown in the table above occurred in Time 3, shown by the presence of more than three instances in lexically varied contexts. Since that point of time onwards, both past –ed and plural –s markers have regularly been supplied in the subject’s L2 written production.

Based on the research finding, it can be argued that the acquisition of the morphemes follows the prediction of PT which hypothesises that the emergence of both past –ed and plural –s markers occurs at comparatively the same point in time, as they are predicted to belong to the same processing procedure – i.e. the category procedure. Therefore, the processability hierarchy for English L2 morphemes under examination is supported by the longitudinal, written data of this research as well as the longitudinal, oral data (see e.g. Yamaguchi, 2009).

CONCLUSIONS

The results of this longitudinal study has shown that the acquisition of the two morphological structures (i.e. past –ed marker and plural –s marker) in LE’s interlanguage from her written production of English L2 appears to follow the predictions hypothesised by Processability Theory, which is indicated by the comparatively same point of time of emergence of the two morphemes and by the implicational sequence of the two structures without any gaps in the hierarchy. Further, the research result reveals that the PT’s predictions on the two morphemes, hypothesised to belong to the same stage of processing procedure, are followed in the written production of English L2 as well as in the spoken production of English as L2 based on the findings of the previous research investigating the acquisition of English morphology based on Processability Theory.

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