

Original Paper

L2 Written Production by Japanese Learners of English

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Received: October 8, 2020 Accepted: October 17, 2020 Online Published: October 27, 2020

doi:10.22158/elsr.v1n2p88

URL: <http://dx.doi.org/10.22158/elsr.v1n2p88>

Abstract

This paper presents part of the results of a learner corpus study of English spoken and written performances by Japanese native speakers. For the current study, the written data from 80 participants were used. Their English written production was examined based on Processability Theory (PT; Pienemann, 1998, 2005; Bettoni & Di Biase, 2015) as well as on the Common European Framework of Reference for Languages (CEFR; Council of Europe, 2001). Results demonstrated that there was an implicational pattern in the acquisition of English L2 grammar by the Japanese learners as predicted in PT. It was also shown that there was a linear connection between second language (L2) development as found in PT analysis and L2 proficiency levels as measured by the CEFR rating, while a statistically significant difference was not found.

Keywords

written production, L2, English, Japanese learners, Processability Theory, CEFR

1. Introduction

The present study aims to investigate empirically second language (L2) learners' written production using two different approaches. Processability Theory (PT; Pienemann, 1998; Pienemann, Di Biase, & Kawaguchi, 2005), a major theory of Second Language Acquisition (SLA), is used to analyze the participants' use of L2 grammatical structures. Their overall written performances were also measured by the Common European Framework of Reference for Languages (CEFR; Council of Europe, 2001).

PT assumes that a universal hierarchy of L2 development exists. Based on Levelt's (1989) Speech Model and Lexical Functional Grammar (LFG; e.g., Bresnan, 2001), PT hypothesizes as to the L2 learners' developmental stages concerning the acquisition of grammatical structures, including morphology and syntax. In 2005, PT proposed the new hypotheses regarding the acquisition of syntactic structures (Pienemann, Di Biase, & Kawaguchi, 2015) in accordance with the development of LFG.

One of the hypotheses in the PT extension is the Lexical Mapping Hypothesis (The LMH; Pienemann, Di Biase, & Kawaguchi, 2015) which accounts for the development of argument mapping between thematic roles and grammatical functions in sentence construction. Table 1 summarizes the developmental stages of English syntactic structures hypothesized in the LMH.

Table 1. Developmental Stages for English Syntax Based on the Lexical Mapping Hypothesis (after Pienemann, Di Biase, & Kawaguchi, 2005)

STAGE	STRUCTURE	EXAMPLE
4. NON-DEFAULT MAPPING	passive	<i>The ball was kicked by Lisa</i>
	causative	<i>Dad made Bob wash the car</i>
3. DEFAULT MAPPING + ADDITIONAL ARGUMENT	Ditransitive	<i>Janet gave Ben a present</i>
	Canonical sentence + Oblique argument	<i>Tim put the book on the desk</i>
2. DEFAULT MAPPING	Canonical word order	<i>Lisa kicked the ball</i>
	e.g., agent-event-patient	
1. LEMMA ACCESS	single words	<i>Look</i>
	formulas	<i>Thank you</i>

The LMH claims that L2 learners start constructing sentences using “default mapping” when they become able to produce utterances of more than one word. In “default mapping,” the highest available role in the thematic hierarchy, the Agent, is mapped onto the Subject (SUBJ) grammatical function. The sample sentence (1) shows typical “default mapping” with a transitive verb “kick,” which requires two arguments. In sentence (1), the most prominent role, the Agent “*Lisa*” is mapped onto the SUBJ, and the less prominent role, the Patient “*the ball*” is mapped onto the Object (OBJ), as shown in Figure 1.

(1) *Lisa kicked the ball*

Agent	Patient	- thematic role
SUBJ	OBJ	- grammatical function
<i>Lisa</i>	<i>the ball</i>	- constituent structure

Figure 1. Default Mapping: *Lisa kicked the ball*

According to the LMH, L2 learners gradually learn how to direct the listener’s attention to a particular thematic role lower in the hierarchy by promoting it to the SUBJ and de-focusing the highest role by

mapping it onto a grammatical function other than the SUBJ, or by suppressing it. A typical case of non-default mapping is Passive, as in the sample sentence (2). As represented in Figure 2, the Patient “the ball” is mapped onto the most prominent grammatical function, SUBJ, while the highest thematic role, the Agent, is suppressed and appears as Adjunct, “by Lisa.” The LMH predicts that L2 learners become able to produce “non-default mapping” which requires a much higher processing cost only after “default mapping” is in place.

(2) *The ball was kicked by Lisa*

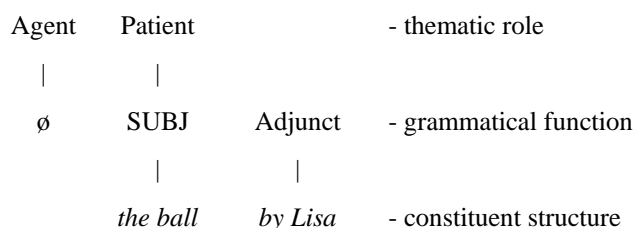


Figure 2. Non-default Mapping: *The ball was kicked by Lisa*

The Common European Framework of Reference for Languages (CEFR; Council of Europe, 2001) describes “what language learners have to do in order to use a language for communication and what knowledge and skills they have to develop so as to be able to act effectively” (Council of Europe, 2001, p. 1) and characterizes language learners’ communicative proficiency at six levels, including A1, A2, B1, B2, C1, and C2. In the CEFR ratings, learners at the A1/A2 levels can be regarded as Basic Users, those at the B1/B2 levels can be considered as Independent Users, and those at the C1/C2 levels are generally thought of as Proficient Users. The CEFR offers “a common basis for the elaboration of language syllabuses, curriculum guidelines, examinations, textbooks, etc. across Europe (Council of Europe, 2001, p. 1)” and has been widely used in current second/foreign language education. However, empirical research with L2 learner data has not been extensively conducted on the CEFR levels (e.g., Hulstijn, 2011; Wisniewski, 2017). Hulstijn (2011) argues that:

Any association between CEFR levels of L2P [L2 Proficiency] and L2 development as studied in the second language acquisition (SLA) literature would be completely misplaced [...], unless empirical studies show evidence in its support. (Hulstijn, 2011, p. 241)

2. Previous Studies

PT has been used to analyze the development of L2 grammar in various recent SLA studies (e.g., Bettoni & Di Biase, 2015; Keßler, Lenzing, & Liebner, 2016; Lenzing, Nicholas, & Roos, 2019; Pienemann, 1998, 2005). On the other hand, studies on the LMH have been conducted mainly with Japanese L2 data (Kawaguchi, 2005, 2007, 2008, 2009a, 2009b, 2016), and the acquisition of the passive construction has been the focus of English L2 studies on the LMH (e.g., Di Biase, Kawaguchi, & Yamaguchi, 2015; Keatinge & Keßler, 2009; Wang, 2009). Also, since most PT studies have been

done on L2 spoken production, the issues of its validity in L2 writing need to be addressed with more learner data.

As mentioned above, the CEFR has not been sufficiently investigated with L2 learner data yet (e.g., Hulstijn, 2011; Wisniewski, 2017). However, some recent research, which examined the acquisition of L2 grammar based on the CEFR and PT, found that L2 proficiency had some connection with L2 development (Granfeldt & Ågren, 2013; Hagenfeld, 2017; Yamaguchi, 2019a, 2019b). Granfeldt and Ågren (2013) examined written data produced by 38 Swedish speakers learning French as a third language (L3). They analyzed the development of morphosyntax in L3 French based on PT, and the learners' communicative proficiency was measured by two CEFR raters. A strong correlation between the CEFR rating and the PT analysis was found, while a dispersion at more advanced stages was shown to exist. Thus, Granfeldt and Ågren (2013) claimed that learners' communicative proficiency up to the CEFR B1 level and morphosyntactic development up to PT stage 3 seemed to develop at the same rate. Hagenfeld (2017) examined the CEFR-based rating of 21 novice and ten expert raters on 14 original and eight edited files of the same speech samples and found a positive correlation between the CEFR levels and PT stages, again, only at lower levels. Yet, these studies indicated some connection between L2 proficiency and L2 development.

While Granfeldt and Ågren (2013) and Hagenfeld (2017) examined the development of morphosyntax based on the original PT (Pienemann, 1998, 2005), Yamaguchi (2019a, 2019b) analyzed the acquisition of English syntax by Japanese learners of English using the LMH in the PT extension (Pienemann, Di Biase, & Kawaguchi, 2005) and demonstrated similar findings regarding the connection between L2 proficiency and L2 development. However, the correlation between the CEFR and PT stages was not shown to be as strong as that found in the research on the development of morphosyntax by Granfeldt and Ågren (2013) and Hagenfeld (2017).

3. Research Question

The current study addresses the following research questions.

- 1). Does the acquisition of English syntax found in the written production by Japanese learners follow the developmental sequence as predicted in the LMH in PT?
- 2). Is L2 proficiency levels as measured by the CEFR rating related to L2 development of English syntax as found in PT analysis in a corpus of English written production by Japanese learners?

4. Methodology

In the present study, 80 participants' written data were randomly chosen from the Japanese Learner Corpus of English Narratives (JaLCEN) constructed by Yamaguchi and Usami (2017a, 2017b). JaLCEN consists of 946 files of English Spoken and Written performances by 473 Japanese native speakers, aged 18-30. For the data elicitation, each participant was asked to perform both spoken and written narratives using a picture book called "*Frog, where are you?*" (Mayer, 1969). This picture book

contains 24 wordless pictures and has been widely used in various first/second language acquisition studies. Half of the participants (i.e., 40 learners) were asked to begin with written narratives and the other half to start with spoken narratives to minimize the ordering effects. The participants wrote their written narratives with pen and paper, while their spoken narratives were audio-recorded and transcribed.

For the data analysis, the participants' acquisition of English L2 syntax was examined based on the LMH in PT, while their overall written performances were measured by two experienced CEFR raters. In the PT analysis, the current study determined if a target syntactic structure was acquired by each participant based on the emergence criterion. According to PT, "emergence can be understood as the point in time at which certain skills have, in principle, been attained or at which certain operation can, in principle, be carried out" (Pienemann, 1998, p. 138). Although most previous language acquisition studies examined the development of grammatical structures based on accuracy, PT argues that using a grammatical structure at a high level of accuracy, even 80% to 90%, does not guarantee that the learner will be able to continue producing that structure at the same or higher level of accuracy in the future. Regarding the PT analysis of English syntax, sentences with default mapping, as in (3) and (4), were coded as stage 2 structures.

(3) *bees chased Tim*

(4) *the boy and dog found the frog*

Then, those with default mapping with additional arguments, as in (5) and (6), were coded as stage 3 features.

(5) *they named their new frog friend Froggie*

(6) *the dog put his head into the jar*

When non-default mapping, as in (7), appeared, the learner was considered to have reached stage 4 for English syntax.

(7) *the dog was chased by many bees*

5. Results and Discussion

5.1 PT Stages for English L2 Syntax

Table 2 presents the results of the PT analysis for developmental stages for English L2 syntax found in the written production by 80 Japanese learners. All the 80 learners produced various sentences with default mapping in their written narratives. Two of them were found to use only default mapping and they can be regarded to be at stage 2. On the other hand, 28 learners produced stage 3 structures, that is, default mapping plus another argument, while 50 learners were found to use non-default mapping. Thus, 62.5% of the participants in this study were found to have reached the highest PT stage for English L2 syntax. Also, since all the stage 4 learners were shown to produce syntactic structures belonging to stage 3 (i.e., default mapping plus another argument), there was an implicational pattern in the development of English L2 syntax. Thus, it can be argued that the acquisition of English syntax found

in the written production by Japanese learners follows the developmental sequence as predicted in the LMH in PT.

Table 2. PT Stages Found in English Written Production by 80 Japanese Learners

PT stage	2	3	4
n = 80	2	28	50

5.2 CEFR Levels

Table 3 summarizes the results of the CEFR rating for L2 proficiency levels found in English written production by 80 Japanese learners. According to the table, although no CEFR A1 level was found, 45 learners were regarded as A2 level suggesting that more than half of the participants in this study, namely 56.25%, were considered as Basic Users by the CEFR raters. On the other hand, 31 learners were rated as B1 level, and four learners as B2 level. That is, 43.75% of the participants in this study are regarded as Independent users in English writing.

Table 3. CEFR Levels Found in English Written Production by 80 Japanese Learners

CEFR level	A1	A2	B1	B2
n = 80	0	45	31	4

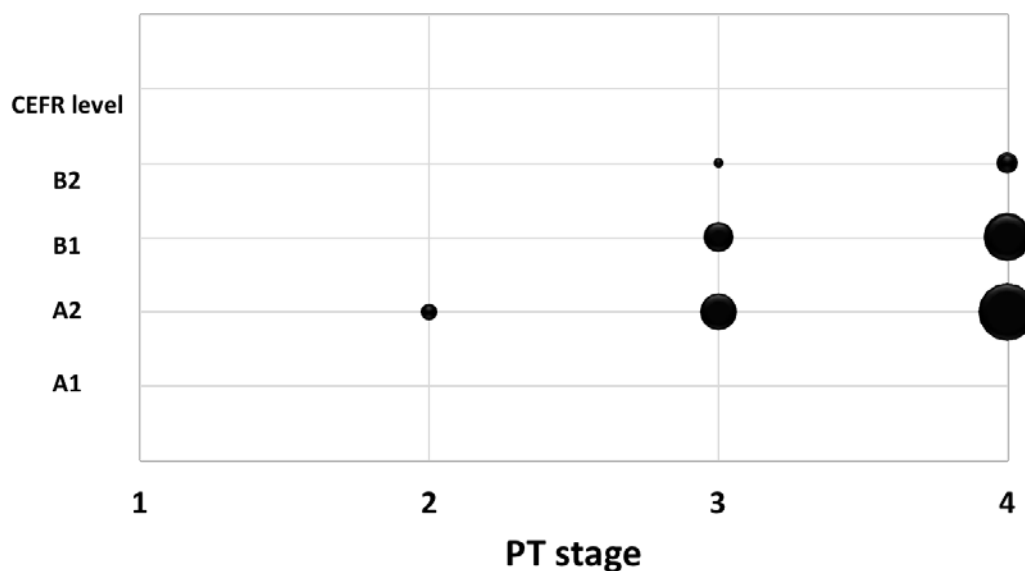
5.3 Relationship between PT Stages and the CEFR levels

Table 4 summarizes how PT stages and the CEFR levels are related in English written production by 80 Japanese learners in this study. As shown in the table, only two learners were found to be at PT stage 2, and both were rated as A2 level suggesting that they were regarded as Basic Users in the CEFR ratings. As for PT stage 3, 16 learners were rated as A2 level, 11 learners as B1 level, and one learner as B2 level. Concerning PT stage 4, 27 learners were rated as A2 level, 20 learners as B1 level, and three learners as B2 level. This suggests that more than half of the participants who have reached the highest PT stage for English syntax were regarded as Basic Users by the CEFR raters.

Table 4. Relationship between PT Stages and the CEFR Levels Found in English Written Production by 80 Japanese Learners

PT stage CEFR level	PT stage			Total (n = 80)
	2	3	4	
B2	0	1	3	4
B1	0	11	20	31
A2	2	16	27	45
A1	0	0	0	0
Total (n = 80)	2	28	50	80

Figure 3 presents the correlation between PT stages and the CEFR levels found in the English written production by 80 Japanese learners. In the scatterplot in Figure 3, the size of each circle varies according to the number of participants. According to this scatterplot, there seems to be a linear connection between PT stages and the CEFR levels. However, the result of a Spearman's rho test showed that the correlation between the participants' PT stages and CEFR levels for English writing was not statistically significant. This finding is not consistent with the results of the previous study by Granfeldt and Ågren (2013) who also examined the relationship between PT stages and the CEFR levels with written data.

**Figure 3. Correlation of PT Stages and the CEFR Levels Found in English Written Production by 80 Japanese Learners**

On the other hand, the dispersion was found to increase at higher PT stages as indicated in the previous research by Granfeldt and Ågren (2013) and Hagenfeldt (2017). For instance, more than half of the PT stage 4 learners were rated as CEFR A2 level, namely as Basic Users, as shown above. (8) to (10) present the sample sentences produced by one of the PT stage 4 learners rated as CEFR A2 level (i.e., Learner #36). Learner #36 frequently produced the sentences with non-default mapping, as in the samples below, and is considered to have reached PT stage 4 for English L2 syntax according to the emergence criterion in PT. However, the CEFR ratings for this learner range from A1+ to A2, as shown in Table 5.

(8) #36 *Unfortunately, bird entered from that hole, and a boy was very surprised. A dog was followed by so many bees.*

(9) #36 *A boy was carried by a deer. A deer ran fast.*

(10) #36 *Bees was angry because honey's house was fall by a dog and broken. A boy find second hole on the tree. He said "frog! where is!"*

Table 5. The CEFR Ratings for Learner #36

Global Scale	Overall Written Production	General Linguistic Range	Grammatical Accuracy	Vocabulary Range	Vocabulary Control
A2	A1+	A2	A2	A2	A2

In fact, Learner #36 often made grammatical mistakes regarding the use of articles, verb forms, and so on, as in samples (8) to (10). Also, this learner used the wrong vocabulary, as in (10), "*honey's house*" for "*beehive*." This suggests that the L2 learners who often make grammatical and/or vocabulary mistakes can be rated as Basic Users in the CEFR rating system, although they frequently produce advanced grammatical structures. Further studies are needed to address the issues of the possible causes for the dispersion between two approaches in more detail.

6. Conclusion

The results of the analysis of a learner corpus of 80 Japanese learners of English demonstrate that the acquisition of English syntax found in L2 written production follows the developmental sequence as predicted in the LMH in PT. This study also shows that there is a linear connection between PT stages and the CEFR levels. Thus, it can be argued that L2 proficiency levels as measured by the CEFR rating is related to L2 development of English syntax as found in PT analysis in a corpus of English written production by Japanese learners to some extent. However, the correlation between the participants' PT stages and CEFR levels is not shown to be statistically significant, and the dispersion between these two approaches is found to increase at more advanced PT stages. Since this study examined only written data by 80 Japanese learners of English focusing on the development of English L2 syntax in

PT analysis, future research should explore the relationship between CEFR L2 proficiency and PT developmental stages with a greater variety of learner data. In particular, the correlation between L2 proficiency and L2 development was not shown to be as strong as that demonstrated in the previous studies (Granfeldt & Ågren, 2013). Thus, more research is required to investigate whether the discrepancies found in these studies were caused by methodological differences (e.g., elicitation tasks, target grammatical structures).

Acknowledgments

This work was in part supported by JSPS KAKENHI Grant Number 18K00754. The author is grateful to Hiroko Usami, Katharina Hagenfeld, Kiki Nakamura, Satomi Kawaguchi, & Bruno Di Biase for their kind assistance with data collection and analysis.

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