

In experimental studies how can we deal with chunk productions by learners?

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Abstract: Pienmann (1998; 2011) has proposed an L2 developmental schedule known as his “Processability Theory” or PT. The theory has been assumed in many empirical studies using not only speaking tasks (production) but reception tasks. However, writing studies for PT have not yet been developed. In this study, Michimoto’s two empirical studies (Michimoto, 2015a; 2015b) are used in order to examine PT through writing tasks and to establish a suitable method for designing writing tasks. Important technical issues which need to be overcome are discussed. The present study considers how, based on PT, to handle communicative writing tasks under time controls. Another issue discussed is how to recognize language chunks and how to deal with them. In addition, the possibility of incompatibility with PT developmental stages is shown.

Key words: chunks, Processability Theory, writing tasks, communicative tasks, EFL learners

1. Introduction

Processability Theory (PT) is a theory of second language acquisition (SLA) which has been developed to explain developmental sequences in SLA as well as some other phenomena (Pienemann, 1998; 2011). PT validity has been supported by a number of empirical studies which have mainly targeted learners' oral performance (e.g. Kawaguchi, 2009; Dyson, 2009; Baten, 2011). Recently, using the PT framework not only learners' production but also reception skills have been tested (Spinner, 2013; Buyl and Housen, 2015). These studies have suggested that a similar mechanism may be at work for learners in a L2 course with regard to both production and reception. However, the validity of PT has not been tested for writing performance because learners' writing performance based on PT has not been sufficiently studied yet.

In one writing study by Håkansson and Norby (2006), Swedish learners' writing performance was studied. However, they used translation and essay tasks which were not PT tasks as PT tasks need to elicit spontaneous production through communicative tasks. The other writing PT studies are Michimoto (2015a; 2015b) in which 45 and 56 Japanese EFL (English as a foreign language) learners participated respectively. The first study was

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discussed in Michimoto (2015a); the second study has not yet been finished although a poster presentation on it was shown at the 17th Annual International Conference of the Japanese Society for Language Sciences (JSLs 2015) (Michimoto, 2015b). Unfortunately, technical problems still remain in both these studies and the studies have insufficient morphological data to meet the PT criterion regarding the emergence of lexical and morphological variation. This paper points out some technical problems that need to be solved in order to use writing tasks in the future to examine the validity of PT. In addition, this paper discusses how to establish a suitable method for designing writing tasks.

PT for writing has special importance for EFL learners. This is because for some EFL students writing tasks may be more familiar than speaking tasks and they may perhaps better display their language ability. In order to assess writing ability, we need to find a way to deal with the learning and production of “chunks” a process which influences the developmental process of EFL learners.

2. English question formation and the stages of development of PT

In order to examine PT through writing tasks and to establish a suitable method for designing writing tasks, two important issues should be considered. The first issue, based on Michimoto (2015a; 2015b), is the use of “question sentences” as developmental indices. Originally PT explained development stages by means of the acquisition of English question formation by ESL learners as shown in table 1 following Pienemann (2011: 14).

According to the original PT, from the first developmental stage, Stage 1 on Table 1 below, to the final Stage 6, all language learners will gradually be able to produce a variety of sentences correctly. To “distinguish” each word by its part of speech and to “invert” appropriate words correctly are the main PT assumptions.

On the contrary, from Michimoto’s two studies based on PT with writing tasks, Japanese EFL learners, who

Table 1. ESL acquisition (Pienemann 2011: 14)

<i>Stage</i>	<i>Syntax</i>		<i>Morphology</i>	+	>	-
6	Cancel inversion	I wonder where he is? I wonder what he wants to eat .				
5	Do-2nd Aux-2nd Neg-do 2nd	Why did she eat that? Where have you lost it. Why didn't you to tell me?	3sg-s	he eats	he is eats	he eat
4	Y/N inversion Copula inversion Particle shift	Have you seen him? Is he at home? Where is she? Turn it off!				
3	Do-fronting Adverb-fronting Neg+Verb	do he live here? Today, he stay here.	pl-agreement	two cat-s	a cats	two cat
2	Neg+SVO	no me live here me live here you live here	past-ed plural-s poss. -s	she play-ed cat-s Pat's cat	go-ed he saw Pat's	V+0 two cat Pat cat
1	Single word Formula	How are you? -Where is X? - Hello - Five Dock - Central				

were not beginners of English study but who had studied English for more than nine years, tended to produce some sentences as predictable chunks. For example, some second person "do" questions which are included in auxiliary 2nd questions in stage 5 were easily formed (e.g., "Why don't you swim together?", "What did you do yesterday?"); however the Japanese students did not produce correct third person "do" or some questions with auxiliaries (e.g. "When school started is in your country?", "When start school in America?"). From the results, we cannot assume that EFL learners correctly distinguish word classes and invert words properly despite the "correct" sentences which are produced. These are superficial productions of the students.

A possible reason for these correct, but superficially correct, productions is that in Japan, in order to teach "communicative English" many kinds of question sentences have been taught to Japanese learners as fixed expressions or "chunks" in textbooks. In addition, as EFL learners often repeat the sentence in the textbook loudly in or out of the classroom, the chunk or the words that co-occur will be remembered unconsciously (Kadota, 2012). With regard to this, we do not know the size of the chunk previously memorized or the amount of originality in the learner's sentences; I think this is also an important issue. Are questions appropriate for use as development indices in EFL writing studies? If so, what sort of questions are appropriate? Are some questions only appropriate in languages which are more linguistically similar to the native language of the participants than English is to Japanese?

3. PT writing Tasks with time control as communicative tasks

A second problem in establishing a suitable design for PT writing tasks may be related to "time control" during writing tasks. This problem will also be related to "Chunk usage."

According to Pienemann (2011), some PT tasks to elicit learner data should be communicative tasks and they have suggested that "tasks are more effective than linguistic interviews".

As interviews are usually used to test speaking ability in language learning studies, this statement suggests that Pienemann are speaking only of "speaking" situations, not of writing situations. The important issue here is how to develop a communicative situation on paper and how to develop tasks which can elicit each participant's true writing and communicative performance in an experimental study.

How can we include communicative tasks in a writing study based on PT? In an empirical study can we utilize the same situation to examine both speaking and writing? Hakanson and Norby (2006) can give us an important clue for these questions. Their study may be the first PT study using writing (they also used speaking tasks in the same study). They tested PT with two writing tasks to elicit target structures from a learner or learners who studied Swedish as an L2 and as a foreign language; A composition task and a translation task (the two tasks were not communicative PT tasks) were used. The result was that the participants produced syntactic structures in accordance with PT predictions in their speaking and writing, but for some participants, the writing tasks which allowed planning time helped the participants produce some target structures they could not produce with speaking

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tasks.

When Ellis (2009) wrote about “time pressure” to elicit the implicit knowledge of an L2 learner, one task, an “Oral production test under time constraint” was used. PT is based on a speaking model in accordance with Levelt’s (1989) model of language generation. In order to come close to the desired generation of speaking content from learners, we need to find a way to introduce time pressure into writing tasks so as to produce a pseudo-natural setting during writing tasks. In the tasks of Hakånsen and Norby (2006) and in Michimoto’s writing tasks there has inevitably been some planning time, time which allows learners to correct their English production if they wish. If time pressure can be introduced into writing tasks, we will be able to more correctly measure learners' true ability and thus decide whether PT applies or not. Tasks with time pressure may cause more chunk usage from participants, so we need to find a way to distinguish grammatical productions from chunks.

4. Another stage on EFL learners developmental course

In this section, using data derived from Michimoto's second study with 56 participants, which has not yet been finished, we will discuss some possibilities for PT writing studies. Michimoto (2015b), was unable to predict the “original” PT developmental stages from the results of her study; however, PT order was found in the syntactic development shown in the writing of EFL learners.

Michimoto’s second study tested PT validity using six writing tasks which were also used in her first study: (a) picture description task, (b) habitual action task, (c) story writing task, (d) introduction task, (e) communication task, (f) essay. However, some changes in task administration were added to her second study with some structures added but also some structures deleted in order to elicit specific structures. In Michimoto's first study there was a problem involving the use of be-verb in agreement with the subject in a Wh-copula sentence. Therefore, in her second study, it was necessary to design tasks to elicit target structures containing agreement of subject and verb. For example, Pseudo inversion (Wh-copula) sentences² were distinguished by having a singular subject or by having a plural subject. In her study, some learners could write “How much are these robots?”, but some wrote “How much is two robots? in response to a task. The latter sentence contains an error copula form “is”, and is therefore judged as an error sentence.

In addition, in Michimoto’s second study, question sentences containing first and second person form DO and an auxiliary verb were removed, for instance, “What did you do yesterday” was produced by some learners, however we do not know whether the sentence contains chunks or not. Therefore, the sentence was removed from the study. On the other hand, “When will he come home?” was included. An interesting modification which is, however, incompatible with PT was added to some tasks. From Michimoto’s first study, a time difference between participants perhaps occurred during each writing task. Therefore, in Michimoto’s second study, all tasks were administered with sufficient time for all participants to complete the task. In some cases, based on Hakånsen and Norby’s study, extra time will provide planning time for learners. Therefore, we can only say Table 2 apparently

Table 2. 56 Japanese EFL learners' developmental course based on PT

PT Stage	1	2	2	3	3	3	4	4	5	6	
Participant	Words	SVO	S neg V	Do 1st	ADV 1st	Y/N INV	Wh-cop	Cop INV	Do, Aux 2nd, (3rd person singular)	Can Inv	WH-DO+Svo
3201	+	+	+	+	+	-	-	/	-	/	+
3204	+	+	+	-	+	-	+	/	/	-	+
4104	+	+	-	+	+	+	+	-	-	+	/
3207	+	+	+	+	/	-	+	/	-	/	/
3210	+	+	+	+	+	/	-	/	/	-	+
4302	+	+	+	+	+	/	+	/	-	-	+
4207	+	+	+	+	+	+	+	/	-	-	/
3213	+	+	+	+	+	-	+	/	-	+	/
3301	+	+	/	+	+	/	+	+	-	-	+
4303	+	+	+	+	+	/	-	+	-	/	/
4505	+	+	+	+	+	/	-	+	-	/	/
4103	+	+	+	+	+	+	+	+	-	-	/
4404	+	+	+	+	+	/	+	+	-	-	/
3212	+	+	+	+	+	+	+	+	-	-	/
3203	+	+	+	+	/	+	+	/	-	/	/
4102	+	+	+	+	+	/	+	+	/	-	+
3206	+	+	+	+	+	+	+	/	/	-	/
3208	+	+	-	+	+	+	+	/	/	/	/
3209	+	+	+	+	+	+	+	+	-	/	/
4501	+	+	+	+	+	/	+	+	-	/	+
4502	+	+	-	+	+	+	+	+	/	+	/
4503	+	+	+	+	+	/	+	+	-	/	+
4201	+	+	/	+	+	+	+	/	-	/	/
4203	+	+	+	/	+	+	+	+	-	/	+
4101	+	+	+	+	+	+	+	/	-	/	+
4401	+	+	+	+	+	-	+	+	/	/	/
4504	+	+	+	+	+	+	+	+	/	-	/
3303	+	+	+	+	+	+	+	/	-	/	/
4403	+	+	+	+	+	/	+	/	-	/	+
4406	+	+	/	+	+	+	+	+	-	/	+
4305	+	+	+	/	+	+	+	/	-	/	/
3101	+	+	+	+	+	+	+	/	/	-	+
3216	+	+	+	+	+	+	+	+	-	+	+
4409	+	+	+	+	+	+	+	+	-	/	/
4105	+	+	+	+	+	/	+	/	-	+	/
4208	+	+	+	+	/	/	+	/	/	-	/
3202	+	+	+	+	+	+	+	+	/	/	/
3205	+	+	/	+	/	+	+	/	+	+	/
4301	+	+	/	+	+	+	+	+	/	/	+
4202	+	+	+	+	+	+	+	+	+	+	/
4204	+	+	/	+	+	+	+	/	/	/	/
4205	+	+	+	+	+	+	+	+	/	/	+
4206	+	+	+	+	+	+	/	+	/	/	+
3211	+	+	+	+	/	/	+	+	+	/	/
4304	+	+	/	/	+	+	+	+	+	/	/
3302	+	+	+	+	+	+	+	+	/	/	/
4402	+	+	+	+	/	/	+	/	/	/	+
4405	+	+	+	+	+	/	+	/	/	/	/
4407	+	+	+	+	+	/	+	/	/	/	/
4408	+	+	+	+	+	/	+	+	/	/	+
4506	+	+	+	+	/	/	+	/	/	/	/
4507	+	+	+	+	+	+	+	/	/	+	/
3214	+	+	+	+	+	+	+	/	/	/	+
4508	+	+	+	+	+	+	+	+	/	/	/
3215	+	+	+	+	+	+	+	/	+	+	/
4601	+	+	+	+	+	+	+	+	+	/	/
NS	+	+	+	+	+	/	+	+	+	+	/

Note. SVO = canonical word order. Do Adv, 1st= Do, Adverb first. Y/N, Cop INV = Yes/No, Copula inversion.

Wh-com = Wh- copula, Do, Aux 2nd = Do, Auxiliary second. Can Inv = Cancel inversion.

"+" = acquired. "-" = not acquired. "/" = no obligatory context the form.

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shows the EFL learners syntactic development based on PT.

Implicational scaling and two calculations have often been used for PT studies following Hatch and Lazaraton (1991), who claimed if the figure of the coefficient of reproducibility (Crep) is over .90 and the figure of the coefficient of scalability (Cscal) is over .60, the set of data can be scalable (Hatch and Lazaraton, 1991: 210-214). Table 2 also used these calculations to judge whether the data can show valid developmental stages. In the table, Crep is .97 and Cscal is .57. Although the figures do not satisfy the standards of Hatch and Lazaraton (1991), they are only approximate figures and the data almost meets the PT prediction. However, planning time was perhaps given some participants in Michimoto's second study and we do not yet know whether the study is showing evidence of PT or not. Other important findings can be seen in the table: 20 participants produced WH-DO+SVO sentences ("How many have you books?"), a structure which is not included as an index in the original PT. However, a regularity regarding the production of such sentences can be observed in table 2 from Michimoto (2015). Except for one participant (#3216) not one of the 19 participants produced Do + Auxiliary second sentence of stage 5 or a Cancel inversion sentence of stage 6. The other participants over-generated WH+Do +SVO sentences. From the result, we can suppose an overgeneralization from DO first (Do you like music?) or an English canonical word order SVO would be the cause of this production.

From the results, we can predict some possibilities. One of them is that in the case of EFL development, learners have a stage of WH-DO+SVO. Secondly, before learners acquire "inversion" processing for DO + Auxiliary second and Cancel inversion, they put objects (O) as "additions" for all sentences. However, this prediction has a serious problem because in this study (Michimoto, 2015b) sufficient planning time was given just some participants so that some participants wrote sentences "procedurally" and not "naturally" which is assumed in communicative tasks.

5. Discussion

This paper has considered some of the difficulties of using writing tasks to validate PT with Japanese students and raises two questions regarding methods to improve the prediction of an EFL learner's syntactic development stage. The first problem is that EFL students may produce chunks of memorized material. How can we recognize these chunks and how can we deal with them? Can we develop tasks which can distinguish productions of previously memorized chunks?

The second problem is the question of how to control the time allowed study participants. Should all participants be required to complete the tasks in the same length of time or should the study take into consideration the fact that some students can process language information quickly but others cannot.

Based on the points raised in this paper, research questions regarding PT writing studies are as follows:

- 1) What is the effect of the chunks produced by Japanese EFL learners on their language development process?
- 2) How can the planning time and time pressure be structured for writing tasks so as to allow the participants to

produce individual results?

3) Is it possible to test PT with writing tasks? This is the most fundamental question.

6. Conclusion

I think that PT studies using writing tasks are more useful than speaking tasks because much data can be collected at once if a suitable method is established for testing. In addition, if a suitable method for PT testing using writing is established, it can be applied to all languages which will contribute to language education throughout the world. Studies with Japanese participants may help develop understanding of language learning in general.

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Notes

1. Table 1 was a part of a presentation at the 17th Annual International conference of the Japanese Society for Language Sciences (JLS 2015) on July 18, 2015.
2. PT has some changed from Pienemann (1988) to Pienemann (2011), one of them is a treatment of pseudo inversion. On the PT table from Pienemann (2011), pseudo inversion in PT stage 4 was deleted.

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