



Reassessing the Pro-drop Parameter of Taiwanese EFL Learners

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Abstract

Pro-drop is a very interesting linguistic phenomenon. It has long been discussed not only in Universal Grammar, but also in second language acquisition. Few studies, however, address the actual use of English [-pro-drop] and Chinese [+pro-drop] by native speakers of Mandarin Chinese (Chen 1994a, 1994b; Ou, 1998; Wen & Wu, 1997) and the basis of their judgment. Therefore, the purpose of this paper is to understand the effects of English proficiency on the acquisition of English [-pro-drop] parameter and to explore the effects of explicit instruction of [\pm pro-drop] features. Three experimental tasks, involving a translation task, a grammaticality judgment task and an additional think-aloud task, were implemented. The subjects included 60 Taiwanese EFL learners, all of whom completed these tasks and received explicit instruction of pro-drop parameter (IPP). The current research clearly manifested that most participants, in spite of different English achievements, benefited a lot from IPP. It is thus suggested that English teachers should incorporate explicit instruction of the [\pm pro-drop] features to raise learners' awareness of the [\pm pro-drop] features and to familiarize learners with different syntactic patterns in different languages.

1. INTRODUCTION

Pro-drop is a very interesting linguistic phenomenon. It has long been discussed not only in the Universal Grammar (UG), but also in the second language acquisition (SLA). A large number of researchers have investigated English [-pro-drop] parameter by non-native speakers and claimed that L1-based knowledge has considerably influenced L2 learners' interlanguage (Hageman & Ihsane, 2001; Liceras & Diaz, 1999; Montrul & Garavito, 1999; Phinney, 1987; Snyder, Senghas & Inman, 2001; White, 1985). Few studies, however, have addressed the actual use of English [-pro-drop] and Chinese [+pro-drop] by native speakers of Mandarin Chinese (Chen 1994a, 1994b; Ou, 1998; Wen & Wu, 1997) and investigate to what extent certain explicit instruction would influence the setting of [\pm pro-drop] parameter for Taiwanese EFL learners.

The purpose of this paper is to understand the effects of English proficiency and of the explicit instruction of pro-drop parameter (hereafter IPP) on Taiwanese EFL learners. Three experimental tasks, including a translation task, a grammaticality

judgment task, and an additional think-aloud task, were implemented. The research questions are proposed as follows:

- (a) What are the performance of English [-pro-drop] parameter shown in the comparison between two different task types? Is there any significant difference in the students' performance before and after IPP?
- (b) What are the strategies used by more proficient and less proficient Taiwanese senior high school learners in setting English [-pro-drop] parameter? Is there any significant difference in the use of strategies before and after IPP?
- (c) **What are the attitudes as well as responses of senior high school learners toward IPP?**

This study will carve up the discussion into four major parts. The first part is the literature review on linguistic analysis of pro-drop parameter and Mandarin speakers' performance of English [-pro-drop]. The description of subjects, instruments, procedures, and data analysis is included in the second part. The third part presents the findings of the current study and offers further discussion. In the last part, the main idea of this paper is briefly concluded and some possible implications as well as suggestions for future research are also provided.

2. LITERATURE REVIEW

In this section, Chinese and English will be compared in terms of the pro-drop parameter. The linguistic properties of [\pm pro-drop] languages would first be introduced, followed by some related research on the pro-drop parameter.

2.1 Linguistic Properties of the Pro-drop Parameter

[+Pro-drop] languages (e.g. Chinese) are reported to behave differently from [-pro-drop] languages (e.g. English) (Chomsky, 1981). Compared with English, Chinese is often known as having zero pronouns in syntactic positions, semantic interpretations and related clustered features (Chen, 1994a, 1994b; Ou, 1998; Wen & Wu, 1997).

2.1.1 Syntactic positions

Zero pronouns are considered ungrammatical in English. But, they are found in subject positions and object positions in Chinese.

Subject

The omission of subjects is widely viewed as one of the significant features of pro-drop languages (Chomsky, 1981; Hyams, 1986; Phinney, 1987). As in other pro-drop languages, subjects in Chinese can be deleted in a simple sentence (1) and in the embedded clause of a complex sentence (2). Additionally, subjects in Chinese are obligatorily dropped in adverbial clauses (3) and in coordinate clauses (4).

- (1) Wo you yi-ge meimei ___ xihuan youyong.
I have one-CL sister (she) like swimming.
'I have a sister. She likes swimming.'
- (2) Zhangsan shuo ___ bu renshi Lisi. (Huang, 1987)
Zhangsan say (he) not know Lisi.
'Zhangsan said that he did not know Lisi.'

- (3) ___ yi hui dao jia, Zhangsan jin ku. (Huang, 1989)
 (he) once return to home Zhangsan then cry
 ‘As soon as he arrived home, Zhangsan began to cry.’
 (4) John kan le dianying, ___ you du le xiaoshuo. (Xu, 1986)
 John see ASP movie also read ASP novel
 ‘John saw the film and he also read the novel.’

Unlike Chinese, English syntactically controls missing subjects. The omission of subjects in the corresponding positions in English will cause ungrammaticality as in (5), (6), (7) and (8).

- (5) Tom went to see the doctor yesterday. * ___ gave him some medicine.
 (6) *Jack said that ___ doesn’t know Rose.
 (7) *After Rose went on broad, ___ was unhappy.
 (8) John likes to watch TV. *But ___ doesn’t like to go to the movies

Object

Zero pronouns can also take place in object positions of Chinese, as in a simple sentence (9) and in an embedded object position (10).

- (9) Ni zhao dao shoubiao le ma? (Chen, 1994a)
 you find receive watch ASP Q
 ‘Have you found your watch?’
 Wo hai mei zhao dao ____.
 I still not find receive (it).
 ‘I still didn’t find it.’
 (10) Xiaotou yiwei mei ren kanjian ____ . (Xu, 1986)
 thief think no man see (him)
 ‘The thief thought nobody saw him.’

Contrary to Chinese, English does not allow object omission. In (11), the direct object, despite being co-referential with the previous NP *mail*, cannot be deleted. Neither can the object in the embedded clause (12) be dropped.

- (11) Did you get any gift on your birthday?
 *No, I didn’t get ____.
 (12) Mike lost his car last week, *but the police have found ____ for him.

2.1.2 Semantic interpretations

In Chinese, discourse usually offers certain semantic interpretations for noun phrases, leading to the NP omission (Chien, 1983; Yang, 1993). With sufficient information given in the discourse, Chinese speakers tend to identify the referent of a particular pronoun and then drop that pronoun. It is referentiality that determines whether a pronoun can be omitted, which is our focus in this section.

Referentiality

As mentioned earlier, Chinese is a discourse-oriented language (Chien, 1983), in which Chinese-speaking people are likely to extend a single sentence unit to the whole discourse (Yang, 1993). Discourse often helps to drop pronouns that are

known to speakers and hearers. For instance, the pronouns, referring to the topic or the previously mentioned NP in (13), are omitted to avoid repetition (Chu, 1990) or the pronouns being salient to the addressee and speaker in (14a & 14b) are usually deleted.

- (13) Zhe-ben shu, ta mai ___ le hou, ___ hai mei kan ____.
 this-CL book he buy (it) ASP after (he) still not see (it)
 ‘This book, after buying it, he has not read it.’
- (14) a. Wo lai xi lu dou. (Zeng, 1988)
 I come wash mung beans
 ‘I’ll wash the mung beans.’
- b. Mama, ___ zema hai bu zhu ___ a ?
 Mother (you) why still not boil (beans) Q
 ‘Mother, why haven’t you washed the mung beans?’

Non-Referentiality

English allows sentences with non-referential subjects, for example, *it* and *there*, which have no semantic interpretation. However, in a topic-prominent language, like Chinese, where subjects are not so important, such ‘dummy’ or ‘empty’ subjects as *it* and *there* can never be found (Li & Thompson, 1976).

Non-referential subjects in Chinese are obligatory deleted. As illustrated in (15) and (16), the non-referential subject *ta* ‘it’ and *nali* ‘there’ are omitted.

- (15) *Ta/___ zai xia yu le.
 (it) ASP fall rain ASP
 ‘It’s raining.’
- (16) *Nali/___ you liang-ben shu zai zhuzi shang.
 (there) exist two-CL book Prep table on
 ‘There are two books on the table.’

Compared with Chinese, the expletives *it* and *there* must lexically fill the subject position in English for the syntactic reason (Chomsky, 1982). The absence of the pleonastic pronouns *it* and *there* in English, as shown in (17) and (18), will lead to ungrammaticality.

- (17) It/*___ is raining.
 (18) There/*___ are two girls in the garden.

2.1.3 Related cluster features

In addition to missing subjects, Chinese, a [+pro-drop] language exhibits such features as ‘subject-verb inversion’ and ‘no *that*-trace effects’ (Chomsky, 1981), which was further supported by a number of studies (Chen, 1994a, 1994b; White, 1985). In this section, we are going to discuss the difference between Chinese and English in terms of ‘subject-verb inversion’ and ‘*that*-trace effects’.

Subject-verb inversion

Subjects, in Chinese, a [+pro-drop] language, can be inverted in declaratives (Chen 1994a; Ou, 1998), as demonstrated in (19a) and (19b).

- (19) a. Zei pao le. (Li & Thompson, 1978)
 thief run ASP
 ‘The thief has run away.’
 b. Pao le zei
 run ASP thief
 ‘A thief has run away.’

In (19a) and (19b), the subject *zei* ‘a thief’ moves to the post-verbal position. Nevertheless, English does not exhibit such an operation as in (20).

- (20) a. Two visitors have arrived.
 b. * Have arrived two visitors.

If the subject appears in post-verbal position, it is viewed ungrammatical in English, as clarified in (20b). Therefore, we may conclude that subject-verb inversion is allowed in Chinese, not in English.

That-trace Effects

According to Chomsky (1981) and White (1985), [+pro-drop] languages do not have *that*-trace effects, in which the complementizer does not block movement. As shown in (21), Chinese, a [+pro-drop] language with no *that*-trace effects, is not governed by such constraint. Subject extraction is possible in Chinese and sentences like (21a) are grammatical. Additionally, in (21b), the occurrence of the complementizer *shuo* ‘說’ in Chinese does not influence the grammaticality of the sentence.

- (21) a. Ni renwei [____ [shei hui lai]]? (Chen, 1994a)
 you think who will come
 ‘Who do you think will come?’
 b. Ni renwei shuo [____ [shei hui lai]]?
 you think that who will come
 ‘Who do you think will come?’

In contrast to Chinese, English experiences *that*-trace effects. As manifested below, (22a) is correct for there is no complementizer intervening between *t'* and *t*. In (22b), *that* prevents *t'* in Spec,CP from antecedent-governing *t* in the Spec,IP position (Haegeman, 1994).

- (22) a. Who do you think [_{CP} *t'* [_{IP} *t* came]]? (Haegeman, 1994)
 b. *Who do you think [_{CP} *t'* that [_{IP} *t* came]]?

To sum up, Chinese and English differ a lot in the value of the pro-drop parameter. As a pro-drop language, Chinese allows missing subjects, missing objects and the omission of referential as well as non-referential pronouns. Opposed to Chinese, a pronominal subject or object cannot be crossed out in English, a [-pro-drop] language. No matter noun phrases are referential or non-referential, they must be present in English.

2.2 Previous Research on the Pro-drop Parameter

Various researchers have conducted experiments on the pro-drop parameter in L2 acquisition to argue for the existence of UG and the role of L1 (Chen, 1994a, 1994b; Hageman & Ihsane, 2001; Liceras & Diaz, 1999; Montrul & Garavito, 1999; Ou, 1998; Snyder, Senghas & Inman, 2001; Wen & Wu, 1997; White, 1985). Relative studies on the L2 acquisition of Chinese speakers of [+pro-drop] languages learning a [-pro-drop] language, like English, will be reviewed in this section.

Interested in the effect of [pro-drop] parameter on English learning, Chen has conducted a series of studies (Chen, 1994a, 1994b; Chen & Ou, 1999). Among them, Chen (1994b) conducted a study involving 140 Chinese: 39 junior high school students, 41 senior high school students, 29 college students and 31 adult learners of English to investigate whether [\pm pro-drop] parameter would cause a transfer problem for Chinese people learning English. The results indicated that the college students performed best, followed by the senior high students, the junior high students and the adult learners. The error percentage of learners with lower-level English proficiency was higher than that of learners with high-level English proficiency. Additionally, these participants did badly on the task of *that*-trace effect, implying that this kind of task seemed most difficult for them. Just as Chen concluded, the results might not be generalized to the whole Chinese learners of English due to a number of limitations, for example, the representative of the subjects, the test questions in the task and the types of subjects' responses. Further research on the relative topic is thus needed.

Following Chen's studies (1994a, 1994b), Wen and Wu (1997) attempted to examine the acquisition of the pro-drop parameter by Chinese students of English whose L1 is [+pro-drop], while their L2 (i.e. English) is [-pro-drop]. 137 Chinese second-year junior high school students from two schools (one in the city and the other in the suburbs) participated in this study. Two tasks, the grammaticality judgment task and the translation task, were adopted to test these L2 learners' comprehension and production. One of the significant findings in this research was that the translation task seemed more difficult than the grammaticality judgment task. Different clausal structures of the tasks might result in different error percentages. Additionally, the error percentage of lower-level students was higher than that of high-level students in all clausal structures in both tasks, implying that higher-level students performed better on all types of sentence structures. Like Chen (1994b), Wen and Wu (1997) also argued that L1 knowledge might influence L2 learners, especially learners at lower proficiency.

Most recently, Ou (1998) investigated the pro-drop parameter in adult English-speaking learners of Chinese and in adult Chinese-speaking learners of English as a second language. Results demonstrated that Chinese speakers correctly responded to elements in subject position more than those in object position, while English speakers showed the opposite results. With regard to the semantic interpretations, both groups were found to perform on non-referential pronouns better than on referential ones in the two above-mentioned tasks. Furthermore, L1 transfer was proven to exist and both groups applied L1 interpretations to L2, especially in response to referential pronouns.

Among these above-mentioned studies, few researchers have conducted such a follow-up task as a think-aloud task to investigate how L2 learners manipulate their

knowledge and what the basis of their judgment is. Still, little is known about the process how Taiwanese high school learners use English [-pro-drop] parameter or evaluate the grammaticality of English sentence. Therefore, in the present research a think-aloud task was additionally implemented in the GJ task, as suggested by Chen and Ou (1999). To further explore the role of L1 in L2 acquisition and the effects of explicit instruction of the [\pm pro-drop] parameter, we will in the subsequent section describe the current experiment testing the Taiwanese senior high school learners' acquisition of the [-pro-drop] parameter of English.

3. METHODS

In this section, the design of the current research will be introduced, inclusive of the subjects, instruments, procedures and data analysis.

3.1 Subjects

Sixty first-graders from two classes in a senior high school in southern Taiwan participated in this study. They were further divided into two groups: the more proficiency group (MPG: 30 students) and the less proficient group (LPG: 30 students) based on their English scores in the Subject Achievement Test (SAT), a joint high school entrance examination, in 2003.

3.2 Instruments

The instruments in the current research included a pro-drop test, teaching activities for IPP (Appendix A), and a questionnaire (Appendix B).

The pro-drop test was composed of two tasks: a translation task and a grammaticality judgment task, adapted from Ou (1998). Additionally, a think aloud task was incorporated in the grammaticality judgment task.

The translation task (TR) is a production task. To avoid the problems caused by a production task, like spontaneous speech or free writing, we adopted a guided translation task. In other words, students were asked to translate the given Chinese sentences into English. There were 21 test sentences in the TR task, which followed the three major types (i.e. syntactic positions, semantic interpretations and clustered features), as discussed in Section 2.1.

The second task is the grammaticality judgment task (GJ), the most common task utilized to elicit second language learners' knowledge and to examine the specific features the researcher intends to explore (Chen 1994 a, 1994b; Ou, 1998; Wen & Wu, 1997). In this task, students had to judge the syntactic correctness of each English sentence by marking "O" for correct and "X" for incorrect. Similar to those in TR, there were 21 test sentences in GJ, which were divided into three major types (i.e. syntactic positions, semantic interpretations and clustered features) in Table 1 with clear examples.

Table 1 Example sentences of the pro-drop parameter used in GJ

Type	Tested Feature	Total Number	Example
Syntactic Positions	Subject	3	* He looked unhappy. Maybe something on his mind.
	Object	3	* The novel is interesting. You must read.

Semantic Interpretations	Referential	3	* Jean flied to Hong Kong last weekend. But only spent 3 thousand dollars.
	Non-referential	3	* Still early. We can walk home slowly.
Clustered Features	Missing Subject	3	* My sister didn't eat breakfast, because got up late.
	Subject-verb Inversion	3	* Came a man in blue. He looked sad.
	<i>That</i> -trace Effects	3	* Who you think that will come to join us?

Besides these two tasks, the present study adopted a think-aloud task, a suggested way of peering into the readers' mind in the process of reading (Cohen, 1998; Ericsson & Simon, 1980; McDonough, 1995). Despite the fact that the think-aloud protocol has widely been emphasized in the reading strategy instruction, few researchers have attempted to explore the ability of Taiwanese high school learners to monitor the English grammaticality judgment. Hence, a think-aloud task was additionally incorporated in GJ with a view to raising the veil of the pro-drop parameter employed by Taiwanese high school learners and to exploring how they processed their knowledge or why they considered an English sentence correct.

The second instrument, Instruction of Pro-drop Parameter (IPP), was developed on the basis of the research literature as well as the previously discussed pro-drop test. One month after the pre-test, the researcher explicitly instructed the pro-drop parameter to the subjects. There were four major teaching activities in IPP, inclusive of *brainstorming*, *blank-filling*, *exercising* and *pair work* (Please refer to Appendix A for more details). In these activities, each type of pro-drop features was presented by means of examples and group discussion.

The questionnaire (Appendix B) aimed to investigate the subjects' responses and attitudes toward IPP. It consisted of four parts: *Before doing teaching activities of IPP* (Item 1 to Item 3), *While doing teaching activities of IPP* (Item 4 to Item 8), *After doing teaching activities of IPP* (Item 9 to Item 14), and *Attitudes towards teaching activities of IPP* (Item 15 to Item 20). Totally there were twenty items constructed in a five-point scale, ranging from '1 – strongly disagree,' '2 – disagree,' '3 – neutral,' '4 – agree,' and '5 – strongly agree.'

3.3 Procedures of Data Collection

The overall experiment was generally divided into six phases. In the first phase, the subjects were asked to do TR. While doing the task, they could ask questions about any unfamiliar word. After TR, the researcher met each student individually for GJ and the think-aloud task in the second phase. To ensure that no language barrier would discourage the subjects' guessing efforts, the subjects were allowed to think aloud in their native language, Mandarin. Throughout the think-aloud task, 'interviewer reminders' were utilized. When the subjects became silent or strayed from talking about the target item, the researcher would ask non-specific questions, for example, 'What are you thinking?' or 'How do you know the answer to the test sentence?' Also, the researcher would give them encouragement and support by saying 'You're doing fine.' or 'Please keep telling me more of your idea.'

The third phase took place one month later when the subjects were introduced the overall features of pro-drop by brainstorming and doing exercises (Appendix A). Following the IPP, the subjects were asked to complete TR as a post-test in the fourth phase. As in the second phase, the researcher individually interviewed each subject for GJ and the think-aloud task in the fifth phase. After the post-tests, each student answered a questionnaire of Chinese version (Appendix B) about the pro-drop and the IPP in the last phase.

3.4 Data Analysis

Scoring and statistical analyses followed the data collection. In TR, if the responses showed the accurate [-pro-drop] structures in English, one point was given. Similarly, one point was also given in GJ if the subjects correctly deleted the ungrammatical sentences. No point was given to incorrect judgment, no responses, or answers containing features opposite to the tested properties. Since there were 21 test sentences in both TR and GJ, the highest possible score for these two tasks was 21. As for the inferential statistical analysis, the study adopted the alpha level .05 as the standard of evaluating whether there was any significant difference in students' performance before and after the treatment.

With respect to the think-aloud task, the participants' recorded think-aloud protocols were transcribed by the researcher of this study. Each response was checked with the test sentence, and then a description of the subjects' protocol was thus constructed. The transcripts, acting as the data resources, were then classified into proper categories and discussed in the following section. Both correct responses (CR) and incorrect ones (ICR) prior and after the treatment were analyzed. Furthermore, the results in the questionnaires were discussed to explore the subjects' responses towards IPP.

4. RESULTS & DISCUSSION

This section shows the results of the two tasks (TR & GJ), the think-aloud data, and the questionnaires. To facilitate the discussion, the results of the study are presented in the order of the three research questions.

4.1 Taiwanese EFL Learners' Performance of English [-pro-drop] Parameter

Taiwanese EFL learners' performance of English [-pro-drop] feature would be discussed from the perspective of two different task types (TR & GJ). Additionally, any possible significant difference in their responses before and after IPP would be investigated.

Table 2 The MPG's correct responses to syntactic positions, semantic interpretations, and clustered features before and after IPP

Features	Task	Group	Num.	Mean	CR	SD	t-value	p
Syntactic Positions	TR	Pre	30	0.55	55%	0.26	-6.908*	.000
		Post	30	0.89	89%	0.13		
	GJ	Pre	30	0.81	81%	0.21	-2.878*	.007
		Post	30	0.92	92%	0.13		
Semantic Interpretations	TR	Pre	30	0.67	67%	0.27	-5.279*	.000
		Post	30	0.90	90%	0.14		

Clustered Features	GJ	Pre	30	0.83	83%	0.19	-2.819*	.009
		Post	30	0.94	94%	0.10		
	TR	Pre	30	0.59	59%	0.23	-6.68*	.000
		Post	30	0.89	89%	0.11		
	GJ	Pre	30	0.77	77%	0.20	-4.094*	.000
		Post	30	0.92	92%	0.10		

Note: Pre: the pre-test; Post: the post-test

Table 3 The LPG's correct responses to syntactic positions, semantic interpretations, and clustered features before and after IPP

Features	Task	Group	Num.	Mean	CR	SD	t-value	p
Syntactic Positions	TR	Pre	30	0.31	31%	0.25	-2.276*	.030
		Post	30	0.42	42%	0.26		
	GJ	Pre	30	0.66	66%	0.22	-1.337*	.049
		Post	30	0.67	67%	0.18		
Semantic Interpretations	TR	Pre	30	0.51	51%	0.29	-3.713*	.001
		Post	30	0.67	67%	0.25		
	GJ	Pre	30	0.67	67%	0.18	-2.158*	.039
		Post	30	0.77	77%	0.20		
Clustered Features	TR	Pre	30	0.36	36%	0.23	-2.224*	.034
		Post	30	0.45	45%	0.18		
	GJ	Pre	30	0.64	64%	0.16	-2.342*	.026
		Post	30	0.73	73%	0.16		

Note: Pre: the pre-test; Post: the post-test

Table 2 and Table 3 indicate the results of students' performances in two English tasks (TR & GJ) before and after IPP in terms of three categories: Syntactic Positions, Semantic Interpretations, and Clustered Features. Judging from the mean scores and percentages of correct responses (CR), both the MPG and the LPG performed significantly better in the post-test than in the pre-test in both TR and GJ. In other words, the explicit treatment was effective in enhancing the MPG's and the LPG's awareness to [\pm pro-drop] features in different languages.

In comparison of these two different tasks (TR vs. GJ), both the MPG and the LPG scored higher in GJ than in TR. In other words, it was easier for most students to complete GJ than TR, which added support for the claim of Wen and Wu (1997). Another possible explanation for the better scores in GJ was the unique test feature of GJ, in which students only had to give either True or False. For students, especially those with lower English proficiency, might have difficulty completing a correct English sentence and tend to give up easily in the translation task. This result, however, went against the Ou's (1998) finding that the Chinese speakers responded better in TR than in GJ about the syntactic positions and semantic interpretations. One probable reason accounting for the discrepancy was that the subjects in two studies were of different proficiency and of different learning experience. The participants in the Ou's research ranged from 20 years old to 47 years old and had learned English for a longer period of time, leading to their better proficiency in English. Consequently, they might find it easier to complete a translation task.

In terms of correct responses in the three categories, both the MPG and the LPG performed quite similarly. In general, they were better in the Semantic Interpretations and Syntactic Positions, while they were worst in the Clustered Features in both the pre-test and the post-test. In other words, the idea of Clustered Features was found to be most difficult for most participants, which echoed the finding in Chen (1994b). To further examine to what extent they have made progress after the treatment, we need to conduct a statistical analysis of Effect Size (Lin, 1987).

Table 4 Comparison of Effect Size for the MPG and the LPG

Features	Task	Group	Num.	Effect Size
Syntactic Positions	TR	MPG	30	1.31
		LPG	30	0.44
	GJ	MPG	30	0.52
		LPG	30	0.50
Semantic Interpretations	TR	MPG	30	0.85
		LPG	30	0.55
	GJ	MPG	30	0.58
		LPG	30	0.55
Clustered Features	TR	MPG	30	1.30
		LPG	30	0.39
	GJ	MPG	30	0.75
		LPG	30	0.56

According to Rossi and Wright (1977), certain positive instructional impact could be shown if the Effect Size is larger than 0.25. The larger the Effect Size is, the greater progress the subjects make in achievement tests. As shown in Table 4, after the treatment both the MPG and the LPG made significant strides in setting most of [\pm pro-drop] parameter. Obviously, the MPG, compared with the LPG, had greater improvement since all the numbers of Effect Size in the MPG were higher than those in the LPG. The LPG, though improving to some degree in most categories, had the slightest improvement in the Clustered Features of TR (Effect Size=0.39), which seemed to be most difficult for them. However, in deciding learners' performances in building [\pm pro-drop] parameter, we cannot solely depend on the results of production tasks. Instead, we should also direct our attention to the process how they determined the grammaticality of an English sentence, which is the topic of the following section.

4.2 Taiwanese EFL Learners' Strategies in Setting English [-pro-drop] Parameter

In this sub-section, the strategies adopted by more and less proficient Taiwanese EFL learners in setting English [-pro-drop] parameter would be explored. Also, any possible significant difference in the use of strategies before and after IPP would be examined and discussed.

Table 5 Definitions and examples of the classifications of strategies

Strategy	Definition	Examples
S1: Using Correct English Syntax	The subject's response mentions aspects of grammar, parts of speech, or	There should be a subject in the sentence: " <i>But, only ate some fries.</i> "

	punctuation.	
S2: Using Inappropriate English Syntax	The subject's response mentions uses of incorrect or inappropriate English syntax.	"What do you think is good for him to eat?" It's wrong to have <i>do</i> and <i>is</i> at one sentence.
S3: Translating	The subject translates literally words, phrases, or sentences in Chinese.	(Translations)
S4: Guessing	The subject merely guesses.	This sentence is too difficult for me. I guess it must be wrong.

Table 6 Frequency and percentage of strategies used by Taiwanese high school learners before and after IPP

		MPG				LPG			
		CR	ICR	F	P	CR	ICR	F	P
S1	Pre	361	0	361	58%	175	0	175	28%
	Post	503	0	503	80%	298	0	298	47%
S2	Pre	57	34	91	14%	63	57	120	19%
	Post	31	10	41	6%	40	46	86	14%
S3	Pre	75	72	147	23%	122	105	227	36%
	Post	44	35	79	13%	90	83	173	27%
S4	Pre	15	16	31	5%	46	62	108	17%
	Post	4	3	7	1%	29	44	73	12%

Note: F: frequency; P: percentage

To investigate the strategies used by more proficient and less proficient Taiwanese senior high school learners in grammaticality judgment task, the participants' recorded think-aloud protocols were transcribed and classified into four major categories: S1: Using Correct English Syntax, S2: Using Inappropriate English Syntax, S3: Translating, and S4: Guessing, which were exemplified with proper definitions and examples in Table 5. Based on this classification scheme, both correct responses (CR) and incorrect responses (ICR) were analyzed. One major strategy was decided for each question in GJ and the results of frequency of strategies employed by the participants are presented in Table 6.

One general observation could be made in Table 5 was that learners in different groups resorted to similar categories of strategies with different frequency in order to judge the grammaticality of English sentences. For MPG, the most often adopted strategies was S1, followed by S3, S2, and S4, in both the pre-test and post-test. Unlike MPG, the LPG made most of S3 in the pre-test. After the IPP, most learners in the LPG got more idea of English [-pro-drop] feature and turned to S1 most often in the post-test, clearly demonstrating the positive effects of IPP on the acquisition of English [-pro-drop] parameter.

Table 7 Calculating χ^2 for the MPG in Table 6

	S1	S2	S3	S4	Total
Pre	A 361	B 91	C 147	D 31	630
Post	E	F	G	H	

	503	41	79	7	630
Total	864	132	226	38	1260

Note: $\chi^2 = 77.9$; $**p < 0.01$; $df = 3$; the critical value = 11.3449

Table 8 Calculating χ^2 for the LPG in Table 6

	S1	S2	S3	S4	Total
Pre	A 175	B 120	C 227	D 108	630
Post	E 298	F 86	G 173	H 73	630
Total	473	206	400	181	1260

Note: $\chi^2 = 51.66$; $**p < 0.01$; $df = 3$; the critical value = 11.3449

To ensure the reliability and credibility of the statistical results, a Chi-square analysis was conducted in Table 7 and Table 8. As shown above, two observed χ^2 ($\chi^2=77.9$ for the MPG and $\chi^2=51.66$ for the LPG) were significantly greater than the critical value (11.3449). Hence, we could confidently state that there was a systematic relationship between the dependent (strategy use) and independent (the pre-test and the post-test) variables for these two groups. In other words, the number of strategy uses, observed above, was significantly different prior and after the explicit treatment of pro-drop. On the basis of the results, a detailed discussion on readers' differences and strategy differences with illustrations will be carried out below.

In terms of "S1: Using Correct English Syntax," the frequency and percentage used by the MPG in each subcategory were considerably higher than those utilized by the LPG (Table 6). Most of learners with higher English proficiency could identify the ungrammaticality of English sentences at the first glance. Learners of lower English proficiency, on the other hand, often failed to point out the unacceptable usage of English. Instead, they might turn to translate the sentence into Chinese or simply guess. Take MPG-1, LPG-5, and LPG-12 for example.

MPG-1: 'The TV program is very good. I watch every evening.' There should be an object following the verb *watch*.

LPG-5: 'My sister didn't eat breakfast, because got up late.' When I translate this sentence into Chinese, it makes sense to me. So, I think this sentence should be correct.

LPG-12: 'Jean flied to Hong Kong last weekend. But only spent 3 thousand dollars.' I have no idea of the word *flied*; this sentence is too difficult for me. I guess it could be wrong.

With reference to "S2: Using Inappropriate English Syntax," it was surprising to find that both the MPG and the LPG gave right answers on the basis of incorrect or improper English syntax. Compared with the LPG, the MPG possessed less misunderstanding of English syntax and made fewer mistakes in judging the grammaticality of English. As exemplified below, MPG-3 and LPG-4 answered the questions accurately, but revealed their misconception of English syntax.

MPG-3: ‘Who do you think that will come to join us?’ I think English does not allow two auxiliaries ‘...do... will...’ in one sentence. I consider this sentence incorrect.

LPG-4: ‘After a baseball game, went away groups of people.’ This sentence lacks a conjunction, so it must be a wrong sentence.

In the current study, “S3: Translating” was often adopted by both the MPG and the LPG in determining whether an English sentence was grammatical or not. The LPG especially turned to “Translating” with strikingly higher frequency than the MPG. Translating an English sentence into Chinese sometimes did lead them to the correct responses. Nonetheless, most of the time, they attended only to Chinese interpretations, without noticing the errors in English, as LPG-5 demonstrated above. Although both the LPG and the MPG resorted to the translating strategy, most learners in the MPG did not concentrate entirely on translating word by word as those in the LPG did. Instead of limiting themselves to the translating strategy only, learners with higher proficiency of English might flexibly utilize other strategies, as MPG-14 presented below.

MPG-14: ‘Still early. We can walk home slowly.’ These sentences seem acceptable in Chinese. But, I think there should be a subject in the first sentence. So, it could be a wrong sentence.

In light of “S4: Guessing,” the frequency among learners in the LPG was significantly higher than in the MPG. In other words, a large number of learners in the LPG might find the sentences too difficult for them, being likely to give no response or to simply offer their guesses, as LPG-15 revealed.

LPG-15: ‘SARS is spreading around the world. Hundreds of people died of the disease.’ This sentence is too difficult for me. I guess it could be incorrect.

After the treatment, both the MPG and the LPG applied the correct English syntax more often, cutting down on the usage of inappropriate English syntax, of Chinese interpretation, and of guessing. Let’s take three of the above-mentioned subjects for example to demonstrate their accurate modification of strategies in the same question while doing the post think-aloud task.

LPG-5: ‘My sister didn’t eat breakfast, because got up late.’ There should be a subject in the clause of *because*. So, I think this sentence should be incorrect.

MPG-3: ‘Who do you think that will come to join us?’ I know the word *that* should be deleted in English. This sentence is wrong.

LPG-4: ‘After a baseball game, went away groups of people.’ This sentence should be reversed as ‘... groups of people went away.’

To sum up, the MPG and the LPG, though possessing similar knowledge of the strategies, were differentiated in the degree of actual use in the grammaticality judgment of English. Surprisingly, both the MPG and the LPG, despite giving correct responses, misunderstood English syntax to some degree and failed to point out the ungrammatical parts in English sentences. After the treatment, both the MPG and the LPG utilized

proper English syntax more often and attended less to inappropriate English syntax, Chinese interpretation, and guessing. Therefore, their above-discussed errors have been dramatically diminished, demonstrating a strong support of IPP.

4.3 Attitudes and Responses of Taiwanese Learners towards IPP

This sub-section focuses on the attitudes and responses of Taiwanese EFL learners towards IPP. To what extent and in what ways IPP might have exerted an influence on these participants would be manifested.

Table 9 presents the statistical results of students' questionnaire about IPP. A significant difference was found in the overall items between the MPG's and the LPG's attitudes toward the treatment of pro-drop ($t= 7.13, p < .05$). Both the mean score of the MPG and the LPG were extremely higher than the average score (2.5), strongly implying that a great majority of learners exhibited their positive attitude toward the effects of the treatment. However, the mean score of the LPG was 3.31, a bit lower than that of the MPG (3.94), clearly demonstrating that the MPG had expressed more supportive responses toward IPP.

Specially, the MPG and the LPG displayed significant differences in the items, marked with asterisk (*), about the familiarity of Chinese pro-drop (Item 1), familiarity of [-pro-drop] in English (Item 2), the difference of pro-noun usage between Chinese and English (Item 3), the learnability of general pro-drop (Item 4), of referential pro-drop (Item 5), of non-referential pro-drop (Item 6), and of *that*-trace effects (Item 8). After the treatment, the MPG possessed extremely clear idea of difference of pro-noun usage between Chinese and English (Item 9), of general pro-drop (Item 10), of referential pro-drop (Item 11), of non-referential pro-drop (Item 12), and of S-V Inversion (Item 13). As far as the participants' responses toward IPP, the MPG significantly acknowledged the importance of the pro-drop activities (Item 19) and the usefulness of pro-drop activities, especially in "Blank-filling" (Item 16) and "Exercising" (Item 17). All in all, the MPG, compared with the LPG, expressed remarkable interests in the treatment and positive attitudes toward learning syntax. This result has echoed the previous finding that learners in the MPG have made greater progress in acquiring the [\pm pro-drop] parameter in two different languages.

5. CONCLUSION

This study aims to explore the effects of English proficiency on the Taiwanese senior high school learners' acquisition of English [-pro-drop] parameter with experimental tasks and an explicit instruction of the [\pm pro-drop] features. On the basis of data analysis, there are three major findings in the current research. First of all, learners in the MPG performed better in both TR and GJ and attended to correct English syntax more often than those in the LPG, no matter before or after the treatment. Secondly, following IPP, all the students, no matter more or less proficiency groups, not merely scored higher in both TR and GJ, but also made better use of proper English syntax to figure out English sentences. Learners in the MPG, compared with those in the LPG, made greater strides in both the two production tasks and the think-aloud protocol. Thirdly, most of the participants showed their appreciation of IPP and considered the activities of pro-drop helpful in setting the [\pm pro-drop] parameters in two different languages, English and Chinese. These findings also shed bright light on the EFL pedagogy. The current research clearly

manifested that most senior high school students, in spite of different English achievements, benefited a lot from IPP. It is thus suggested that English teachers should incorporate explicit instruction of the [\pm pro-drop] features to raise learners' awareness of the [\pm pro-drop] features and to familiarize learners with different syntactic patterns in different languages.

Though this study has yielded some findings regarding the acquisition of pro-drop parameter in English for Taiwanese senior high school learners, several limitations exist in the current research. First, in the present study, we only recruited sixty Taiwanese high school students. To unveil the overall parameter-settings of pro-drop for Taiwanese learners, we need to consider more population from different levels of education. It would be interesting to recruit participants with other linguistic backgrounds but the same [+pro-drop] feature in their mother tongues and to examine whether similar pattern to Taiwanese EFL learners could be identified across languages. The second constraint of the present research was the short period of time spent on the treatment and the limited content of the treatment. It would be better to lengthen the training course of the [\pm pro-drop] setting or to include more practice in the treatment in the further studies. Furthermore, the future researchers could make use of other experimental tasks than the translation task and the judgment task with a view to having more objective and profound views of the parameter-setting model for learners in Taiwan or for other ESF/EFL learners with the same [+pro-drop] parameter in their native languages.

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Appendix A Teaching Activities of IPP

I. 腦力激盪 (Brainstorming): Examine the following sentences and discuss in groups the difference between each Chinese sentence and English counterpart.

1. 我有一個妹妹喜歡游泳。 I have a sister. She likes swimming.
2. 你找到手錶了嗎？我還沒找到。 Have you found your watch? I still didn't find it.
3. 在下雨了！ It's raining.
4. 跑了賊。 A thief has run away.
5. 你認為說誰會來？ Who do you think will come?

II. 特色統整 (Blank-filling): Put “O” for the features allowed in a language. Otherwise, put “X” for the ungrammatical points.

	Chinese	English
代名詞省略		
可指涉代名詞省略		
無指涉代名詞省略		
主詞、動詞互調		
引介詞that中立		

III. 習題演練 (Exercising):

(A) Translation Task: Translate the following Chinese sentences into English.

1. Tom說不認識 Linda.
2. 小偷以為沒人看見。
3. 有兩本書在桌子上！
4. 演唱會後，走了一群人。
5. 你認為說誰會當選 (be elected as) 班長？

(B) Grammaticality Judgment Task: True “O” or False “X”

() 1. Rick is in trouble, because did not do his homework.
() 2. Jim lost his wallet and asked the police to find for him.
() 3. Quite dark. We had better turn on the light.
() 4. Flied away a group of birds.
() 5. Who do you think that got lost?

IV. 自我創作 (Pair Work): Think of one Chinese sentence of each category and ask your partner to write down the English counterpart. Then, check with your partner if s/he has done it right.

	Chinese	English
1.		
2.		
3.		
4.		
5.		

Appendix B Questionnaire

Please check ✓ in appropriate □.

1: strongly disagree; 2: disagree; 3: neutral;
4: agree; 5: strongly agree

1 2 3 4 5

(I) Before doing teaching activities of IPP :

- 1. I am very familiar with the usage of pronouns in Chinese.
- 2. I am very familiar with the usage of pronouns in English.
- 3. I think the usage of pronouns in English is different from that in Chinese.

(II) While doing teaching activities of IPP :

- 4. The section of *general pro-drop* in the teaching activities is very easy for me.
- 5. The section of *referential pro-drop* in the teaching activities is very easy for me.
- 6. The section of *non-referential pro-drop* in the teaching activities is very easy for me.
- 7. The section of *S-V Inversion* in the teaching activities is very easy for me.
- 8. The section of *that-trace effects* in the teaching activities is very easy for me.

(III) After doing teaching activities of IPP :

- 9. After the activities, I had more idea of *pro-drop parameter* in Chinese and in English.
- 10. After the activities, I had clear idea of the usage of *general pro-drop*.
- 11. After the activities, I had clear idea of the usage of *referential pro-drop*.
- 12. After the activities, I had clear idea of the usage of *non-referential pro-drop*.

13. After the activities, I had clear idea of the usage of *S-V Inversion*.

14. After the activities, I had clear idea of *that-trace effects*.

(IV) Attitudes towards teaching activities of IPP :

15. The activity of “Brainstorming” helped me most in the understanding of pro-drop.

16. The activity of “Blank-filling” helped me most in the understanding of pro-drop.

17. The activity of “Exercising” helped me most in the understanding of pro-drop.

18. The activity of “Pair Work” helped me most in the understanding of pro-drop.

19. I found the activities of pro-drop important and helpful.

20. I was very interested in the activities of pro-drop. Learning syntax is not boring for me.