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Research Paper

Investigating Optional Functional Element and Obligatory Contour Principle in L2 Comprehension and Production Among ESL Learners

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Abstract

Most studies in optional functional element (OFE), specifically the optional function word (OFW) such as the optional *that* and obligatory contour principle (OCP), are concerned with accounting facilitation in language production in L1. The present study accounted for comprehension facilitation of OFE and OCP in syntactically ambiguous clausal complement, and OCP in L2 production among 180 ESL speakers. Utilizing quasi-experimental through the nonequivalent groups research design, the study found out differences in the interpretation of sentences with and without *that*. Adjacent identical elements (double *thats*) seemed to be avoided because they are perceived to be ungrammatical. Findings suggest that complementary clause (CC), with an embedded specific noun, is easily understood if optional *that* is included, whereas CC with an embedded common noun is easily understood without the said optional word. Findings are also pivotal in understanding comprehension-facilitation and production-facilitation accounts in L2 with respect to OFE and OCP.

Keywords: Comprehension; Language Production; Identical Elements; Optional Functional Element; Obligatory Contour Principle; Psycholinguistics

1. Introduction

In Krashen's (1981, 1982, 1985) theoretical constructs, language comprehension is considered a primary component of L2 learning and acquisition; hence, it precedes production. Transfer of L1 processing strategies to L2 syntactic structure has been proven to be true in many studies. For example, Harrington (1987) found that Japanese L1 and L2 speakers used the same processing strategies when interpreting ESL sentences, indicating a strong influence of L1 processing strategies to L2. The study suggests the use of sentence processing strategies by L2 speakers is heavily geared to L1 linguistic features. Also, Koda's (1993) findings show how L2 specific linguistic features interact with the reading skills transferred from L1.

Research studies on optional functional element (OFE) have typically focused on investigating the speakers' choice as whether to include optional function word (OFW) such as complementizer or optional *that* (henceforth, optional *that*) in the sentence to avoid ambiguity (e.g., Ferreira, 2002; Ferreira & Dell, 2000; Roland, Elman & Ferreira, 2006), and in the constraints of the said OFW (e.g. Ferreira & Dell, 2000; Ferreira & Firato, 2002; Jaeger, 2005; Walter & Jaeger, 2008). Most studies on the role of the optional *that* are typically associated with language production and in L1. Only a handful of research studies investigated its role in comprehension (e.g. Hakes & Cairns, 1970; Hakes, Evans & Brannon, 1976; Hakes & Foss, 1970; Race & MacDonald, 2003).

Some studies suggest advantages in the inclusion of *that*, whereas some studies show otherwise. Many of these studies have shown that comprehension difficulty is reduced when *that* is inserted or used. However, with regards to language production, other studies suggest that the inclusion of *that* seems to be a cause of language or production difficulty. It was noted that the omission of optional *that* in sentences creates ambiguity about the status of the noun phrase for the comprehender. In the absence of other contextual information, when words and phrases in a sentence are read, inferences will be made about their grammatical structure and meaning which will likely result in different



interpretations. In these interpretations, one is preferred over another. At the same time, one is also a misinterpretation and another is the expected. Consider the examples below (Ferreira & Engelhardt, 2006, p. 79):

1. The weary traveler claimed his luggage had been stolen.
2. The weary traveler claimed *that* his luggage had been stolen.

In the first sentence, the parser might make a mistake and analyze it as subject or the word *luggage* is only the subject of the CC, but how it is comprehended/parsed might be either of the two interpretations, one of which is definitely not true. The use of optional *that* essentially makes the sentence clear and comprehensible. It was posited that “if speakers attempt to produce utterances that are easy for their listeners to understand, one might predict that, the greater the chance of a misinterpretation, the greater the likelihood that speakers will include the complementizer” (Ferreira & Engelhardt, 2006, p. 79). This means that the optional *that* is imperative in sentences where the verb takes both DO and CC (3), but unnecessary if the verb preceding the ambiguous noun phrase subcategorized for only CC (4; Ferreira & Engelhardt, 2006).

3. The boy said that his toy has been lost.
4. The boy said he lost his toy car.

Aside from its use as complementizer, *that* can also function as a pronoun (5) or a demonstrative determiner (6). In (7), *that* is either a pronoun referring to a specific brand of beer or an optional word/complementizer referring to any brand of beer (Walter & Jaeger, 2008, p. 12).

5. I believe that *that* is unhealthy.
6. I believe that *that* food is unhealthy.
7. I told you *that* beer from my hometown is bad.

In the autosegmental phonology in generative phonology, the case in (7) may be considered as an OCP case if *beer* is referred to a specific brand, avoiding the adjacent identical elements or double *thats*. This, however, seems to be problematic in comprehension facilitation, especially if such a statement is delivered as written communication rather than spoken because one might interpret it as any kind of beer.

In addition, *that* can occur as complementizer appearing in a subject clause where the clause is in the specifier position in the main clause (8), appositive clause (9), and complement clause (10; Leech & Svartvik, 2003). Examples are cited below:

8. That she’s still alive is sheer luck.
9. Your assumption, that things will improve, is not well-founded.
10. I’m sure that things will improve.

As for language production, how ESL speakers use the lexical and syntactic forms, especially in written communication, is being consciously and unconsciously decided upon. When ESL speakers attempt to produce an English sentence, one of the basic and common strategies is to formulate, first, a sentence in L1 and, then, translate it to L2. In such an attempt, one of the very interesting language production processes is the mechanism as to how the speakers decide whether to include optional *that*, especially in a sentence whose CC subject is a determiner *that*. In such case, do ESL speakers really assume and predict the tendency for misinterpretation? Whereas pieces of evidence suggest a motivation of optional *that* inclusion in L1 (English; e.g., Ferreira, 2003; Ferreira & Dell, 2000), no evidence is available yet in ESL.

The present study primarily sought to account for comprehension facilitation in L2 among ESL speakers, specifically the effect of and the difference between the inclusion (i.e., where the verb takes both DO and CC) and the exclusion (where the verb preceding the ambiguous noun phrase subcategorized for only CC) of optional *that* in comprehension (as in cases 1 and 2), and the effect of and the difference between zero optional word, OCP, and adjacent identical elements in comprehension in syntactically ambiguous CC (as in 7). Also, this study was an attempt to investigate OCP in L2 sentence production.

2. Literature Review

2.1. Optional Functional Element (OFE)

OFE is a linguistic element used as a function word (Race & MacDonald, 2003), an optional complementizer (Ferreira, 2002), or a relativizer (Walter & Jaeger, 2008) in a sentence, for example, *that* (see Ferreira & Engelhardt, 2006). It is believed that its use essentially disambiguates structure, sentence, or, utterance, and avoids misinterpretation. In other words, an optional *that* is more likely to be included if misinterpretation is likely to occur because it makes the sentence clear that the noun phrase is a subject. The hypothesis here is that “if the verb preceding the ambiguous noun phrase subcategorized for only CC, *that* is unnecessary, and so it might be omitted; but if the verb takes both DO and CC, *that* would help the listener avoid making a parsing error” (Ferreira & Engelhardt, 2006, p. 80).

According to Walter and Jaeger (2008), there are, at least, three different sources that can be attributed to the speakers’ choice of optional *that* over the competing zero form (absence of optional *that*): (1) a difference in linguistic meaning, (2) differences in style/register, and (3) differences in processing efficiency. However, in some studies, the measures of processing complexity correlate with optional *that*. This suggests that “at least some of the variation in that omission is not due to difference in meaning (whether social or linguistic) associated with optional *that*” (Walter & Jaeger, 2008). However, Dor (2005) suggests a meaning difference is correlated with optional *that*.

Race and MacDonald (2003) studied the role of *that* in the production and comprehension of object relative clauses (henceforth, ORCs) in which they explored the interplay between production and comprehension. It attempted to investigate why producers include or omit the function word *that* in objective relative clauses. The study suggests that the purpose of including *that* is to alleviate production difficulty and create a distributional pattern of the use of *that* which the comprehenders can detect; hence, the alleviation hypothesis. In other words, the inclusion of *that* gives the speakers time to plan. This is somewhat similar to the filler *uh* (Ferreira & Engelhardt, 2006).

Jaeger (2005) tested the alleviation hypothesis and investigated the distribution of fillers, suspensions, and restarts immediately preceding and following the beginning of nonsubject extracted relative clauses with or without a relativizer. Jaeger argued that speakers may use *that* as a collateral signal to addressees which indicates anticipated production difficulties. This suggests that word omission is likely dependent on the addressees’ needs; hence, the signaling hypothesis. In this hypothesis, the complementizer is assumed to be a signal or symptom of upcoming difficulty (Ferreira & Engelhardt, 2006).

Looking into the experiment of Ferreira and Firato (2002) where optional *that* could be included in speakers’ production of sentence structures, hence, delaying the mention of a subsequent noun phrase, the study showed that speakers produced more *thats* and more disfluencies before conceptually similar noun phrases. The results suggest that the syntactic structures of sentences that speakers produce are affected by the retrieval difficulties during sentence production. This study seemed to support the signaling hypothesis.

2.2. Obligatory Contour Principle (OCP)

OCP had been studied as a universal constraint on phonological representation and rules that restrict underlying and derived tonal representations between tones and vowels (Leben, 1978; Odden, 1986), although in the first version of Leben, the principle states that when two identical tones are associated with adjacent vowels, the rightmost tone is deleted, whereas the leftmost is associated with the freed vowels. OCP operates not only as a morpheme structure constraint, but also as an output condition during the derivation. In the lexical/constructional choice, OCP’s function is to avoid adjacent identical elements (Leben, 1973), influencing both the organization of grammar and phonology such as choice in spontaneous speech (Walter & Jaeger, 2008). Also, it avoids adjacent stressed/unstressed syllables, and it explains that if the embedded subject of a complement or relative clause begins with the determiner *that* (as in example # 6), or if the subject is a pronoun *that* (like in example # 5), an option to avoid uttering two adjacent *thats* by omitting the optional *that* is decided upon (Walter & Jaeger, 2008).

Walter and Jaeger (2008, p. 12) noted that “embedded subject head nouns that can occur either with or without a determiner (in both cases being in the singular) can cause ambiguity that does not get resolved by the singular marking on the noun or the singular agreement of the verb”. In the sentence # 11, *that* can either be an optional

word/complementizer followed by a generic noun *beer* or a pronoun referring to a specific, deictically identified brand of beer (Walter and Jaeger, 2008).

11. I told you that beer from my hometown is bad.

It was hypothesized that if *that* (as in sentence # 11) is an optional *that*, then omitting it prevents ambiguity. If *that* is a determiner, then inserting optional *that* before it prevents ambiguity (i.e., I told you that that beer from my hometown is bad).

In many studies, OCP has been investigated as a constraint (Leben, 1973) and in terms of the avoidance of the kind of identity and the strategies used are avoidance. Frisch, Pierrehumbert, and Broe (2004) argue that OCP is measured in terms of similarity rather than identity. However, Walter and Jaeger (2008) attribute similarity to identity at lower levels of representation with consequent cumulative effects that vary in strength.

Analyses in OCP have been proposed for place of articulation (articulatory gestures/features), individual speech sounds (phonemes), lexical tone (autosegmental/tonal tiers), affixes (morphemes), determiners/*wh*-words (words), functional heads (syntactic categories) and syntactic constructions (phrasal constituents), which support the array of linguistic primitives (Walter & Jaeger, 2008). OCP has been associated with constraints not only in the morpheme structure, but also during the derivation as a sort of output condition (Yip, 1988). This means that the rule is not applicable if the application of rule would produce OCP violation. Yip (1988) argues that OCP might block and trigger rules, condition the mode of application of an ambiguous rule, and act as a universal constraint on phonological rules.

Walter and Jaeger (2008) compared the distribution of optional *that* before pronoun *that* and pronoun *this* utilizing different corpora to initially test OCP or the word form OCP hypothesis—a constraint that avoids adjacent identical elements which predict the frequency of optional *that*, comparing *that* before embedded subjects that begin with *that* (e.g., I believe *that* that drug makes you sleepy) to other types of subjects (e.g., I realize *that* John wanted to see you). The study showed that optional *that* is significantly less frequent before pronoun *that* and before determiner *that*. This means that it is preferred to omit optional *that* if a construction would result in a sequence of identical lexical items.

Also, the same avoidance phenomenon was revealed in the study of Ferreira and Dell (2000), testing the predictions concerning optional word mention of two general approaches to language production in six experiments. The speakers omitted optional words such as the complementizer *that* when a subsequent material was either repeated within a sentence or when prompted with a recall cue, but did not consistently include optional words to avoid a temporary ambiguity. The study suggested that speakers choose syntactic structures not to circumvent disruptive temporary ambiguities, but to permit early mention of available material. The production of complementizer such as *that* in sentential complement constructions (e.g., I know (that) you missed practice) is caused by production difficulty. When the upcoming constructions are difficult to produce, the more likely the speaker will use *that*.

2.3. Objective of the Study

The main aim of this study was to account for the facilitation of OFE and OCP in comprehension and in production among college ESL speakers. Specifically, the following questions were addressed:

- What is the effect of and difference between the inclusion (i.e., where the verb takes both DO and CC) and the exclusion (where the verb preceding the ambiguous noun phrase subcategorized for only CC) of OFE in ESL speakers' comprehension?
- What is the effect of and difference between zero optional word, OCP, and adjacent identical elements in syntactically ambiguous CC with respect to ESL speakers' comprehension?
- How do ESL speakers decide when they are to produce a sentence supposedly with adjacent identical elements?

3. Method

This study employed a quasi-experimental through the nonequivalent groups research design in investigating the effect of the optional word *that* in comprehension and OCP in comprehension and in production.

3.1. Participants and Sampling Technique

The participants were 180 ESL speakers and college students majoring in Marine Technology, Math, and Hospitality Management of the Zamboanga State College of Marine Sciences and Technology, Philippines. They were chosen to participate in this study through a convenient sampling technique, as they were all under the researcher's Purposive Communication class. The participants were average to proficient in English. For ethical considerations, they were given a consent regarding their participation in the study. They were assured that their identity would be treated with utmost confidentiality. They were told that the information collected may not directly benefit them, but shall provide general benefits.

3.2. Research Instrument

This study utilized two sentence comprehension tasks as stimuli to investigate the word *that* in OFE and OCP comprehension (see Appendix). The sentences were adapted from Ferreira and Engelhardt (2006) and Walter and Jaeger (2008). Whereas oral online performance is a trend to test theories of language comprehension and is widely considered a more interactive approach in many psycholinguistic research studies, the instrument of this study was designed as a written offline test item because the very nature of the study was L2 sentence processing that accounts for comprehension facilitation and directly assesses interpretations that tap into the content of representation (see Ferreira & Yang, 2019).

Ferreira and Yang (2019) highlighted the importance of directly assessing interpretation and the tendency of misinterpretation and superficial comprehension which can be attributed to the two general categories: Misinterpretations are assumed to arise firstly "because the language system sometimes fails to work properly due to resource limitations or noise" and secondly "on the notion that the language system might have been designed to handle certain forms well but at the expense of other linguistic forms" (p. 4). Also, they put forth that "the domain of psycholinguistics includes understanding the contents of people's mental representations of language as well as the time it takes to create them" (p. 5), which cannot be determined by merely using online measures. Yet, most studies in L2 processing relatively adopt online measures such as listening comprehension to test competing theories. Although not explicitly stated, it can be implied that offline measures should also be considered in psycholinguistic studies for depth of processing and comprehension (Ferreira & Yang, 2019).

In some sentence comprehension studies, it is observed that readers take a little time reading an especially complex sentence, and that they engage in the so-called triage (i.e., they tend to easily give up and move on) when they encounter such complexities (Ferreira & Yang, 2019). Hence, the comprehension task for OFE contains only two statements for binary contrast: Group 1 was provided with one statement with *that* (i.e., The weary traveler claimed that his luggage had been stolen) where *luggage* is the subject of CC, whereas Group 2 was provided with one statement without *that* (i.e., The weary traveler claimed his luggage had been stolen) where *luggage* may be parsed either as DO of the main clause or subject of the CC. Two possible answers were provided in which only one was required to be chosen for their answer: (a) The weary traveler claimed his stolen luggage and (b) the weary traveler was just telling what happened.

The comprehension task for OCP contained three statements for a three-way contrast: Group 1 was provided with a one-sentence task without the word *that* (i.e., I told you beer from my hometown is bad—where *that* is optional word); Group 2 was provided with a sentence with one *that* (i.e., I told you that beer from my hometown is bad—where *that* is either a demonstrative determiner or an optional *that*); and Group 3 was provided with a sentence with adjacent identical elements/two *thats* (i.e., I told you that that beer from my hometown is bad – where the former *that* is an optional word and the latter is a demonstrative determiner). Two possible answers also were provided in which only one was required to be chosen for their answer: (a) Beer refers to any brand and b) beer refers to a specific brand.

Also, this study utilized a meaning-focused L1-L2 translation task to investigate OCP in L2 sentence production. This task (i.e., the Filipino-English translation task) was purposefully designed to stimulate the participants' production of sentence construction, making them decide whether or not to include optional *that* and/or use adjacent identical elements (12). In this task, the participants were required to translate the sentence according to how they understood it; hence, no answers were provided.

Syntactically, the Filipino language is different from English in that the optional *na* ‘that’ does not precede the determiner *iyang* ‘that.’ The word for word translation reveals that adjacent identical elements are nonexistent Filipino:

12. *Naniniwala ako na ang taong*
 believe I that.COMP the person
iyang mabait.
 that.DET is good
 ‘I believe that that man/person is good.’

3.3. Data Gathering Procedure

First, the participants were divided into two groups to answer the comprehension task for OFE: One group answered the task with the optional *that* and the other group answered the task without the optional word. Then, the participants were divided into three groups to answer the comprehension task for OCP: One group answered the task without the optional *that* and demonstrative determiner *that*, the second group answered the task with the word *that* (which may be treated/comprehended as either an optional *that* or a demonstrative determiner *that*), and the third group answered the task with adjacent identical elements or two *thats*. A Filipino-English translation task was given to all the participants together with the tasks for OFE and OCP to determine the OCP with respect to language production.

The tasks were given to the participants separately with respect to their nature of task. The three tasks were given to them at one time. Because the tasks did not require ample time, the participants were given only 20 min to finish answering. The sessions were all done inside the classroom in the school.

3.4. Data Analysis

The study employed frequency and percentage distribution to analyze and interpret the data. The data or answers were also codified for statistical computation or analysis. Mode was used to determine the frequently occurring code or number. Chi-square test for independent samples was used to determine if there was a significant difference in comprehension between the two groups (i.e., between the inclusion of optional *that* where the verb takes both DO and CC and the exclusion *that* where the verb preceding the ambiguous noun phrase subcategorized for only CC). Chi-square test was used to determine if there was a significant difference in comprehension among the three groups. Syntactic analysis was employed to analyze the sentence production, specifically the ESL speakers’ decision as whether to include *that* in a sentence that is supposedly with adjacent identical elements.

4. Results

4.1. Effect of Optional Functional Element in Comprehension

As seen in Table 1, between the sentence without the optional *that* (i.e., The weary traveler claimed his luggage had been; Group 1) and with optional *that* (i.e., The weary traveler claimed that his luggage had been stolen; Group 2), the results showed differences in comprehension. The results revealed that the majority of the participants from Group 1 [47 (52%)] and Group 2 [65 (72%)] inferred their respective assigned sentence as ‘The weary traveler was just telling what happened.’ This means that the word *luggage* is perceived or understood to be the subject of the CC. In addition, some of the participants from Group 1 [43 (47.8%)] and Group 2 [25 (27.8%)] interpreted it as ‘The weary traveler claimed his stolen luggage.’ In this case, the word *luggage* is perceived or understood to be the DO of the verb *claimed*:

Table 1. Results for Optional Functional Element in Comprehension

Sentences	Comprehension				Mode	p value	Interpretation
	Direct Object		Complementary Clause				
	N	%	N	%			
Group 1 (Without Optional <i>That</i>)	43	47.8	47	52	2 (CC)	0.006	Significant
Group 2 (With Optional <i>That</i>)	25	27.8	65	72	2 (CC)		

@ 0.05 Level of Significance N – Respondents CC – Complementary Clause



Although the majority from both groups perceived *luggage* as the CC subject, the number of participants from Group 1 who perceived it to be DO was closer to the number of participants who perceived it to be CC; hence, the results, further, showed a significant difference in comprehension between Group 1 (without optional *that*) and Group 2 (with optional *that*; $p < .05$ or $p = 0.006$), suggesting that *that* is more likely to be included to avoid ambiguity. This implies that the inclusion and exclusion of optional *that* matter in comprehension, but not to the greatest extent as clearly manifested in the findings. The comprehenders in Group 2 seemed to be sensitive to the distributional properties of optional *that*, a case similar with Race and MacDonald (2003), that is, the inclusion of *that* alleviates production difficulty.

4.2. Effect of Obligatory Contour Principle in Comprehension

For the sentence without the optional word (i.e., I told you beer from my hometown is bad), the results in Table 2 show that the majority of the participants from Group 1 [34 (57%)] understood that *beer* refers to any brand, whereas some [26 (43%)] referred to a specific brand. For the sentence with the word *that* (i.e., I told you that beer from my hometown is bad), the results show that the majority of the participants from Group 2 [31 (52%)] understood that *beer* refers to a specific brand, whereas for others [29 (48%)], it referred to any brand. For the sentence with adjacent identical elements or double *thats* (i.e., I told you that that beer from my hometown is bad), the majority of the participants from Group 3 [46 (77%)] interpreted *beer* as a specific brand, whereas the rest [14 (23%)] understood it as any brand:

Table 2. Results for Obligatory Contour Principle in Comprehension

Sentences	Comprehension				Mode	p Value	Interpretation
	Any Brand		Specific Brand				
	N	%	N	%			
Group 1 (Without Optional <i>That</i>)	34	57	26	43	1 (Any)	0.001	Significant
Group 2 (With Single <i>That</i>)	29	48	31	52	2 (Specific)		
Group 3 (With Adjacent Identical Elements or Double <i>Thats</i>)	14	23	46	77	2 (Specific)		

@0.05 Level of Significance CC – Complementary Clause

Does *that* matter in comprehension? The results, further, show a significant difference in comprehension between the three groups ($p < .05$ or $p = 0.001$), as seen in Table 2. To determine the significant differences between the groups, Table 3 presents the results of differences in comprehension between the groups. It reveals that there was a significant difference in comprehension between Groups 1 and 3 ($p < .05$ or $p = 0.001$), and Groups 2 and 3 ($p < 0.05$ or $p = 0.004$), suggesting that between Groups 1 and 3, the former was more likely to understand *beer* as any brand, whereas the latter as a specific brand; hence, the exclusion of *that* before the ambiguous head noun and the inclusion of *that* before determiner *that* in CC clearly disambiguate such structure. It should be noted that the features of speech prosody in the real context may yield different results. In fact, it was expected of the former to infer *beer* as *any brand*, whereas of the latter as a *specific brand*. The results, further, show no significant difference between Groups 1 and 2 ($p > .05$ or $p = 0.361$); however, a slight difference in frequency is clearly evident:

Table 3. Differences in Comprehension Between Groups

Between Group Differences	p Value	Interpretation
Between Groups 1 and 2	0.361	Not Significant
Between Groups 1 and 3	0.001	Significant
Between Groups 2 and 3	0.004	Significant

4.3. OCP in L2 Sentence Production

Recalling the translation task, the Tagalog statement *Naniniwala ako na ang taong iyan ay mabait* should have been translated literally as *I believe that that person is good*; hence, should be with adjacent identical elements. However, the results in Table 4 show that the majority of the participants [122 (68%)] preferred to omit optional *that*, whereas some [51 (28%)] preferred to use double *thats*, suggesting that the former avoids adjacent identical elements. Thus, OCP is likely to be strong in sentence production:

Table 4. Results for Obligatory Contour Principle in Production

Obligatory Contour Principle	F	%
Zero Form	7	4
With Single <i>That</i>	122	68
With Adjacent Identical Elements or Double <i>That</i> 's	51	28

5. Discussion

For the results in OFE, the sentence without the optional *that* indicates that the status of noun phrase becomes ambiguous for comprehender if *that* is omitted in that the word *luggage* is either the subject of the CC or the DO of *claimed*. On the contrary, the presence of *that* essentially disambiguates the sentence structure, making the clause clear that its subject is the *luggage*. The inclusion of optional *that* is essentially helpful for comprehenders, but only in embedded specific nouns (as in this case, the *luggage*) and not in common nouns (13):

13. I know animals have rights to life too like humans.

In line with production, the prediction is possibly true that the greater the chance of misinterpretation, the more likely the optional *that* will be included. With respect to objective relative clauses, the findings seem to be parallel with Race and MacDonald's (2003) study where they noted the usefulness of optional *that* in comprehension.

The findings, however, contradict the suggestion by Quirk, Greenbaum, Leech, and Svartvik (1985) that optional *that* (which considered also as conjunction) is frequently excluded when the *that*-clause is a direct object or complement (except in formal use) and when a subject *that*-clause is extraposed. This suggestion is clearly coming from the speaker/writer perspective, which likely confuses the comprehenders.

Albeit from the comprehension perspective, these findings, somewhat, confirm the production-facilitation case of Ferreira and Dell (2000), who suggested that the inclusion of *that* is brought about by the needs of the production system (i.e., the inclusion of *that* to disambiguate the statement and facilitate understanding) when the complement in the sentence is less available. Also, Temperly (2003) suggested that the syntactic structural choice (i.e., preference for *that*) is influenced by ambiguity avoidance and anaphoricity.

For OCP in comprehension, because the result shows a significant difference in comprehension between the sentences with a single *that* (i.e., I told you that beer from my hometown is bad) and double *thats* (e.g., I told you that that beer from my hometown is bad), it can be implied that the latter is more likely to infer *beer* as a specific brand, as expected, than the former. The evidence that OCP has an effect on comprehension is clearly manifested in the result of the majority of participants in Group 2. Considering that *beer* is perceived as a specific brand, *that* was understood to be a determiner, not as an optional *that*. Thus, the single *that* before an ambiguous head noun creates an ambiguity as to whether *that* is an optional word or a determiner. Because the majority of the participants in Group 2 inferred *beer* as a specific brand, the findings seem to partly favor the notion that the exclusion of optional *that* for sentences with an embedded head noun or with a generic noun (such as *beer*) prevents ambiguity for comprehenders (Walter & Jaeger, 2008).

To partially answer the question (Walter & Jaeger, 2008) with respect to comprehension-facilitation accounts (Hawkins, 1994, 2004; Temperly, 2003), the sentence with adjacent identical elements seems to have a strong factor of ambiguity avoidance, although lexical adjacency can also be a major rhetorical strategy for producing emphasis, clarity, amplification, or emotional effect (Burton, 2006). Within the history, rhetorical terms have been developed to name both general and very specific sorts of repetition. This means that the inclusion of optional *that* before the determiner *that* seems to be pivotal to avoid ambiguity, except in spoken conversation where the construction is phonologically determined, that is, stress is present and the need to include *that* before *that* is optional.

For OCP in L2 sentence production, most translations using single *that* went this way: 'I believe that person is good,' although other synonymous lexical items for *person* and *good* were used. Here, we can see that *that* in this translation may either be a determiner or an optional *that*. Because the translation is meaning-focused, *that* here is assumed to be a determiner. The results clearly show an indication of low ambiguity avoidance, which is likely the effect of OCP. In producing this type of sentence construction, it can be implied that the greater the chance of misinterpretation, the

lesser the likelihood that L2 speakers will include optional *that*. This study is relative to the findings of Walter and Jaeger (2008) that the omission of optional *that* is preferred by speakers if a sequence of identical lexical items would result.

To answer the question whether adjacent identical word forms are hard to produce, the findings seem to favor this difficulty due to hesitancy and uncertainty in grammatical construction. I personally asked the participants who did not use adjacent identical word forms. The reason was they were not sure whether the use of double *thats* is grammatical or not; hence, they avoided using this construction. This is possibly one of the reasons why most of them eliminated the optional *that*. This preference would actually result in ambiguity in structure as evident in the findings in the previous section that the single *that* before an ambiguous head noun (*person*, in this case) creates an ambiguity as to whether *that* is an optional word or a determiner.

This case, however, is different from what Walter and Jaeger (2008) pointed out that the omission of optional *that* provides an environment in which identical adjacent words can be avoided without resulting in ungrammaticality and without change in meaning, that is, omission of *that* is associated with the complexity of embedded subject in that the more complex CC subject is than more likely is *that* (see Roland, Elman, & Ferreira, 2006; Walter & Jaeger, 2008). Although in the translation task, *person* or *man* could be considered ambiguous, it is not, however, the reason for the omission. In the case of Race and MacDonald's (2003) study, optional *that* tended to be produced in ORCs with a common noun as an embedded subject, but not with a pronoun. However, their case, which suggests that the insertion of *that* alleviates production difficulty, contradicts with this study. In other studies (e.g., Ferreira, 2002; Ferreira & Dell, 2000), optional *that* is likely to be included both in CC and ORC structures when having difficulty retrieving the word that would follow *that*.

The avoidance of adjacent identical elements is no longer new as these have also been avoided across a wide range of genres and styles/registers in World Wide Web and Penn Treebank III. Optional *that* before a determiner was also less frequent before determiner *this* in five different corpora (Walter & Jaeger, 2008).

Pedagogically, the findings suggest that second or foreign language learners should be aware that the use of adjacent identical elements or double *thats* is grammatical and is essential for CCs with common nouns or pronouns as subject. Also, the learners must be taught about the usefulness and constraints of including and excluding optional *that* in preventing ambiguity. In addition, it is important to emphasize the obligatory use of *that* in CC with embedded specific nouns and demonstrative determiners or pronoun *that* in speaking or writing in order to facilitate comprehension.

In writing, in order to avoid ambiguity and misinterpretation and to achieve better understanding, optional *that* before demonstrative *that* is imperative. Although this is way beyond the line of inquiry of this study, in speaking, specifically in spontaneous speech, because intonation and stress are present, optional *that* is no longer obligatory. In other words, the grammatical function of single *that* whether it is an optional word or a determiner is phonologically determined, as clearly evident in many studies.

In addition, Quirk et al. (1985, p. 1049-1050) suggested the inclusion of *that* in interrogative (13) and passive clauses (14), object clauses (15) and superordinate exclamatory clauses (16):

14. Is it possible *that* they can't afford to rent that apartment?
15. It was taught *that* the cease-fire still held.
16. Their daughter's success makes it very likely *that* she will return to California.
17. How strange it is *that* the children are so quiet!

6. Conclusion

The presentation of the findings is pivotal in understanding comprehension-facilitation and production-facilitation accounts with respect to OFE and OCP. The study arrives at the conclusion that the inclusion and exclusion of optional *that* matter in comprehension: CC with embedded specific nouns is easily understood if optional *that* is included, CC with embedded common nouns is easily understood without the said optional word, and CC with a demonstrative determiner or pronoun *that* is easily understood if an optional *that* is included. With regards to

comprehension, optional *that* can be seen not as a constraint, but rather as an element with a special function in written communication. The inclusion and exclusion of optional *that* were and would be helpful for comprehenders.

Regarding OCP in L2 sentence production, adjacent identical elements (double *thats*) seemed to be avoided because they were perceived to be ungrammatical. The participants resorted to omitting the optional *that* which resulted in a strong OCP. In the case where a construction is supposed to have double *thats*, it can be posited that speakers will likely produce an utterance with a single *that*, which is not easy for listeners to comprehend. Because the reason for omitting *that* in a supposed to be double *thats* construction is uncertainty in grammatical rule, then it can be a challenge for further research to test the relationship between OCP and speakers' proficiency in ESL/EFL. Within the scope of this study, if speakers attempt to produce utterances that are easy for their listeners to understand, one might predict that, the greater the chance of a misinterpretation, the greater the likelihood that speakers will include the complementizer".

The study recommends further investigation in the use of OFE and OCP to account for facilitations in production and comprehension utilizing actual spoken utterances. Also, the study recommends further investigation on the differences in comprehension and production between speakers of different L1s, on the relationship between L2 proficiency and comprehension of sentences with zero complementizer, optional *that* and adjacent identical elements, and on the relationship between L2 proficiency and production.

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Appendix

Research Instrument

I. Optional Functional Element

Instructions: Read the statement carefully and encircle only the letter of your answer.

Group 1: The weary traveler claimed that his luggage had been stolen. How do you understand this statement?

- a. The weary traveler claimed his stolen luggage.
- b. The weary traveler was just telling what happened.

Group 2: The weary traveler claimed his luggage had been stolen. How do you understand this statement?

- a. The weary traveler claimed his stolen luggage.
- b. The weary traveler was just telling what happened.

II. Obligatory Contour Principle

Instructions: Read the statement carefully and encircle only the letter of your answer.

Group 1: I told you beer from my hometown is bad. How do you understand *beer* in this statement?

- a. Beer refers to any brand.
- b. Beer refers to a specific brand.

Group 2: I told you beer that from my hometown is bad. How do you understand *beer* in this statement?

- a. Beer refers to any brand.
- b. Beer refers to a specific brand.

Group 3: I told you that that beer from my hometown is bad. How do you understand *beer* in this statement?

- a. Beer refers to any brand.
- b. Beer refers to a specific brand.

III. OCP in L2 Sentence Production

Instructions: Translate the Filipino statement below to English. Write your answer on the space provided.

1. "Naniniwala ako na ang taong iyan ay mabait."

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