

Constraints on Parasitic Gaps and their Acquisition

Namkil Kang¹, Hyewon Cho²

Far East University, South Korea
Far East University, South Korea

The ultimate goal of this paper is to provide an in-depth analysis of the L2 learners' acquisition of parasitic gaps and their constraints. A major point to note is that the licensing category of an English parasitic gap is only a DP, whereas the licensing category of a Korean parasitic gap is a DP, PP, and VP. A further point to note is that an English parasitic gap is subject to a wh-island, an adjunct island, and the pronominal condition, whereas a Korean parasitic gap is not subject to these constraints. It is important to note that in English and Korean, a real gap must be object case-marked as a licenser of a parasitic gap. Additionally, it is worthwhile noting that English parasitic gaps cannot be available from name positions and existential-*there* constructions, but Korean parasitic gaps can. When it comes to the results of our experiment, it is interesting to note that Korean is a superset grammar when compared to English since a Korean parasitic gap requires a wh-trace and NP trace as its licenser, whereas an English parasitic gap requires only a wh-trace as its licenser. Additionally, the L2 learners looked for similarities in Korean grammar and English grammar. It is important to note, on the other hand, that the order of the acquisition of unmarked structures and marked structures is the former first and then the latter. In addition, English parasitic gaps cannot appear inside a relative clause, a wh-island, or an adjunct, whereas Korean parasitic gaps can occur inside a wh-island, or an adjunct, which in turn suggests that the properties of Korean grammar include those of English grammar. A major finding of this paper is that Chomsky's zero transfer position that learners do not need to rely on their L1 is silent about why the percentage of the L2 learners' correct responses to English parasitic gaps is quite low. Another major finding of this paper is that the object case-marked condition was first acquired by the Korean learners of English, followed by the DP condition, the PP condition, the wh-trace condition and the adjunct island condition, the VP condition and the pronominal condition, and the wh-island condition, in that order. Additionally, it is significant to note that a marked property has to do with the order of the acquisition. It impedes L2 learning. Finally, this paper argues that the object case-marked condition and DP condition are those that bear a universal property, whereas the wh-island condition, the VP condition, and the pronominal condition are those that lie outside Universal Grammar.

Keywords: parasitic gap, real gap, universal grammar, marked, acquisition, transfer,

Date of Submission: 29-01-2021

Date of Acceptance: 14-02-2021

I. INTRODUCTION

Let us consider the properties of parasitic gaps. One of the properties of parasitic gaps is that they must depend on a real gap. Thus, parasitic gaps co-vary with a real gap (Chomsky 1982, Postal 1994, Overfelt 2016). Let us observe the following sentence:

(1) Which article did you file e without PRO reading pg

In (1), the second empty category is a parasitic gap since it is dependent upon a real gap left by an overt A-bar movement. In other words, parasitic gaps cannot exist without a real gap. The second empty category is dependent upon the first empty category, the trace of movement-to-COMP. Thus, from this it is clear that a trace licenses parasitic gaps:

(2) A trace licenses a parasitic gap

We attribute the ungrammaticality of (3) to the fact that there is no real gap licensing a parasitic gap:

(3) *Which article did you file the report without reading pg

In (3), there is a parasitic gap, but a real gap does not exist, hence the ungrammaticality of (3).

Now let us observe the following sentence:

(4) *The article was filed e without PRO reading pg

Even though there is a real gap licensing a parasitic gap in (4), (4) is ungrammatical. In (4), an NP trace exists,

¹ First author

² Corresponding author

but it cannot license a parasitic gap, which in turn indicates that not an NP trace but a wh-trace licenses a parasitic gap.

(5) A parasitic gap must depend on a wh-trace

Now let us observe the following sentences:

- (6) a. *Who *t* resigned before we could fire *pg*
 b. Who *t* resigned before we could fire him

Note that (6a) is ungrammatical, whereas (6b) is grammatical. That is, in (6b), the pronoun *him* occurs in the position of a parasitic gap, whereas in (6a), a parasitic gap appears instead of the pronoun *him*. The ungrammaticality of (6a) and the grammaticality of (6b) indicate that a real gap must not c-command a parasitic gap, whereas a real gap must c-command the pronoun *him*. Thus, we can account for the ungrammaticality of (6a) if we modify the definition of (5) as follows:

(7) A parasitic gap is dependent upon a wh-trace that does not c-command it.

However, as Chomsky (1982) points out, there are well-formed cases of parasitic gap structures where no other gap occurs, such as (8):

(8) The man that I went to England without talking to *pg*

In (8), only a parasitic gap exists without a wh-trace. Yet, (8) is grammatical and the grammaticality of (8) cannot be accounted for by assuming (7). We cannot explain the reason why (8) is grammatical, despite the fact that there is no real gap which licenses a parasitic gap. In this paper, we deal with parasitic gap constructions where a real gap appears.

The organization of this paper is as follows. The main purpose of this paper is to provide a detailed analysis of the L2 learners' acquisition of parasitic gaps and their constraints. In section 2, we argue that the licensing category of an English parasitic gap is only a DP, whereas the licensing category of a Korean parasitic gap is a DP, PP, and VP, but not an AP. We further argue that an English parasitic gap is subject to a wh-island and an adjunct island, whereas a Korean parasitic gap is not subject to these conditions. We maintain, on the other hand, that in English and Korean, the object case-marked condition is a licensing condition on a parasitic gap. In addition, we contend that English parasitic gaps cannot be available from name positions and existential-*there* constructions, but Korean parasitic gaps can. In section 3, we elucidate the goals of our experiment and provide information about the subjects. In section 4, we argue that Korean is a superset grammar when compared to English since a Korean parasitic gap requires a wh-trace and NP trace as its licenser, whereas an English parasitic gap requires only a wh-trace as its licenser. Additionally, we maintain that the L2 learners looked for similarities in Korean grammar and English grammar. We contend, on the other hand, that the order of the acquisition of unmarked structures and marked structures is unmarked ones first and then marked ones. In addition, we maintain that English parasitic gaps cannot appear inside a relative clause, a wh-island, or an adjunct, whereas Korean parasitic gaps can occur inside a wh-island, or an adjunct. This suggests that Korean is a superset grammar when compared to English. It is important to note that Chomsky's zero transfer position that learners do not need to rely on their L1 cannot explain why the percentage of the L2 learners' correct responses to English parasitic gaps is quite low. In section 5, we show that the object case-marked condition was first acquired by the Korean learners of English, followed by the DP condition, the PP condition, the wh-trace condition and the adjunct island condition, the VP condition and the pronominal condition, and the wh-island condition, in that order. In addition, we argue that a marked property has to do with the order of the acquisition. It impedes L2 learning. We further argue that the object case-marked condition and DP condition are those that have a universal property, whereas the wh-island condition, the VP condition, and the pronominal condition are those that lie outside Universal Grammar.

II. AN OVERVIEW OF PARASITIC GAPS

2.1. The C-command Condition

Now let us observe a structure where the real gap *t* does not c-command the parasitic gap *e*:

(9) ...[*t*]... [_{adjunct} *pg*] . . .

It is a well-known fact that in (9), a real gap does not c-command a parasitic gap. However, some examples are incompatible with the anti-command requirement, which is an old observation (Contreras 1988). That (10a), (10b), and (10c) are grammatical suggests that a real gap does not c-command a parasitic gap:

- (10) a. They visited us [before we admitted those students]
 b. We interviewed them [before we admitted those students]
 c. We interviewed [their parents] [before we admitted those students]

(Contreras 1988)

In (10a), the command condition between *they* and *those students* does not apply, which leads to the grammaticality of (10a). On the other hand, in (10), the c-command condition does not hold between *them* and

those students, which results in the grammaticality of (10b). When it comes to (10c), *their* does not c-command *those students*, which leads to the ungrammaticality. Note that R-expressions must be free. However, Contreras (1988) presents the following sentences to support the fact that a real gap c-commands a parasitic gap:

- (11) a. *John filed them_i without reading Mary's articles_i.
 b. John filed their_i articles without meeting those students_i.
 c. John filed the articles about them_i without meeting those students_i.

Contreras (1988) argues that c-command does hold between the object and adjunct phrase in (11a). That is to say, (11a) is ungrammatical since *them* c-commands *Mary's articles*. Binding Condition C states that R-expressions must be free. In (11a), the R-expression *Mary's articles* must be free. Yet, the English pronoun *them* c-commands *Mary's articles* and binds it. When it comes to (11b) and (11c), the sentences improve when c-command does not hold. That is to say, in (11b), *their* does not c-command *those students*, which results in the grammaticality of (10b). Likewise, in (11c), c-command does not hold between *them* and *those students*. If in (11a) *them* c-commands *those students*, then *t* c-commands *e* in (9). Then structure of (11a) is (12):

(12) [NP [VP . . . t . . . [adjunct . . . pg . . .]]]

If the structure is (12), then the adjunct phrase is a sister to *t* and c-commanded by *t*.

2.2. Categorical Restrictions

Following Emonds (1985), E. Kiss (1985), Koster (1987), Cinque (1990), Frampton (1990), and Postal (1993), Postal (1994) proposes the following conditions on parasitic gaps and their antecedents.

(13) A parasitic gap is an NP.

(14) PG-Licensing Restriction

The Licensing category of a parasitic gap is an NP.

As Overfelt (2016) points out, these conditions state that a parasitic gap and a real gap are necessarily DP. Let us consider the following sentence:

(15) [DP Whose uncle]_i did you offend e_i by not recognizing pg_i?

The reason why (15) is grammatical is that a parasitic gap and a real gap are DP. The Korean shows the same phenomenon:

(16) pg_i incenghacianhko ne-nun e_i nwukwu-uy samchon-ul
 without recognizing you-TOP who-GEN uncle-ACC
 kipwunul sanghakeyhayssni?
 offend
 (Whose uncle did you offend by not recognizing?)

The grammaticality of (15) and (16) indicates that the licensing category of a parasitic gap is a DP. That is, a parasitic gap and a real gap must be DP. Interestingly, a PP in English fails to permit a parasitic gap, as illustrated in (17):

(17) *That is the woman [PP to whom]_i I gave my number
 e_i without talking to pg_i

In the case of Korean, the displacement of a PP allows parasitic gaps:

(18) Ku-pwun-i pg malhacianhko nay-ka e nay penho-lul
 That-NOM without talking to I gave my number-ACC
 cwun yeinita.
 gave woman
 (That is the woman to whom I gave my number without talking to.)

This example demonstrates that Korean parasitic gap constructions unlike English parasitic gap constructions permit a parasitic gap. This in turn indicates that the licensing category of a parasitic gap is a DP or PP. Postal (1994) and Overfelt (2016) argue that the licensing category of a parasitic gap is only a DP. It is noteworthy that as Overfelt (2016) points out, the displacement of a VP fails to permit a parasitic gap:

(19) It was [VP riding a bike]_i that Sam hated e_i after he tried pg_i?

This example clearly shows that a VP cannot be the licensing category of a parasitic gap. However, Korean shows the opposite:

(20) pg_i tapon hwuey Sam-i e_i silhehankess-un cacenke takiyessta.
 tried after hated-TOP a bike riding
 (It was riding a bike that Sam hated after he tried.)

This sentence clearly indicates that the licensing category of a parasitic gap can be a VP, unlike Postal (1994) and Overfelt's (2016) hypothesis that the licensing category of a parasitic gap is only DP. Thus, this in turn

suggest that in Korean, the displacement of a DP, PP, and VP allows a parasitic gap. Finally, let us consider the following example:

(21) *_{[AP how tired]_i} did Kim become e_i because the hike made her pg_i?

The ungrammaticality of (21) suggests that an AP cannot be the licensing category of a parasitic gap. This implies that in the English parasitic gap constructions, a PP, VP and AP cannot be the licensing category of a parasitic gap. Now let us observe Korean parasitic gaps. Note that in Korean, an AP fails to permit a parasitic gap:

(22) *pg_i toboyehayng-i ku-nye-lul mantuleskittaymwuney
 hike-NOM her-ACC made because
 Kim-i e_i ettehkey pikonhaycyessna?
 NOM how become tired
 (How tired did Kim become because the hike made her?)

As alluded to in (22), an AP fails to allow a parasitic gap. This in turn indicates that in Korean, a DP, PP, and VP allows a parasitic gap, but an AP cannot. This observation tells us that Korean parasitic gap constructions does not support Postal-Overfelt's hypothesis that the licensing category of a parasitic gap is only a DP. We thus conclude that in Korean, the licensing category of a parasitic gap is a DP, PP, and VP, but not an AP.

2.3. The Island Condition

Kayne (1983) and Postal (1994) argue that a parasitic gap cannot be available inside a relative clause that is contained inside the parasitic domain. Let us consider the following example:

(23) *_{[Which sandwich]_i} won't Sam eat e_i [after meeting the man [who makes pg_i]]?

As indicated in (23), a parasitic gap cannot appear inside a relative clause island, which leads to the ungrammaticality of (23). The same applies to Korean parasitic gaps. They cannot occur inside a relative clause island:

(24) *pg_i mantunun ku-salam-ul mananhwuey e_i Sam-i etten sandwich-lul
 made the man-ACC after meeting NOM which ACC
 mekcianhulkessinya?
 won't eat
 (Which sandwich won't Sam eat after meeting the man who makes?)

As alluded to in (24), a Korean parasitic gap cannot occur inside a relative clause that is an island. This indicates that Kayne (1983) and Postal's (1994) claim works for English and Korean. It is interesting to note that a parasitic gap cannot be available inside a wh-island.

(25) *This is the sandwich which Kim will not eat e_i [because she knows [who makes pg_i]]

As pointed out by Overfelt (2016), the reason why (25) is ungrammatical is that a parasitic gap is contained inside a wh-island. However, this condition is not universal since a Korean parasitic gap can occur inside a wh-island. Let us observe the following example:

(26) Ikess-un pg_i nwu-ka mantununci ku-nye-ka alkittaymwuney
 This-NOM who-NOM make she-NOM because know
 Kim-i e_i mekcianhul sandwich-ita.
 NOM won't eat be
 (This is the sandwich which Kim won't eat because she knows who make.)

As indicated in (25), an English parasitic gap cannot appear inside a wh-island, whereas as illustrated in (26), a Korean parasitic gap can occur inside a wh-island. This in turn suggests that a Korean parasitic gap is not subject to a wh-island. That is to say, Kayne (1983) and Postal (1994)'s island condition does not work for Korean.

Finally, let us consider the following example:

(27) *It was Tim [who]_i Pam hired e_i [because the committee couldn't make
 a decision [after interviewing pg_i]]

As pointed out by Overfelt (2016), an English parasitic gap cannot be available inside an adjunct island. (23), (25), and (27) show that an English parasitic gap cannot be embedded inside a relative clause, a wh-island, or an adjunct island. Now let us consider a Korean parasitic gap.

(28) [pg_i interview-lul hanhwu] wiwonhoy-ka kyelcenghalswu epsesskittaymwuney
 ACC after committee-NOM could decide not because
 Pam-i e_i koyonghayssten salam-un Tim-iessta.

NOM hired person-TOP be
 (It was Tim who Pam hired because the committee couldn't make a decision after interviewing.)

As illustrated in (28), the above sentence is not subject to an adjunct island. That is to say, (28) is grammatical, despite the fact that a Korean parasitic gap is embedded inside an adjunct island. We thus conclude that unlike an English parasitic gap, a Korean parasitic gap is not subject to a wh-island and an adjunct island.

2.4. The Object Case-marked Trace Condition

In what follows, we argue that an object case-marked real gap licenses a parasitic gap. Let us observe the following examples:

- (29) a. *Which article_i did you file the book [without reading pg_i]?
 b. Which article_i did you file t_i [without reading pg_i]?

(29a) is ungrammatical since there is no real gap that is object case-marked. On the other hand, (29b) is grammatical since a real gap is object case-marked. Likewise, a Korean parasitic gap is subject to the object case-marked trace condition.

(30) *[pg_i ilkcianhko] ne-nun ku-chayk-ul etten nonmwun-ul_i chelhayssnunya?

This sentence clearly shows that the object case-marked trace condition works for a Korean parasitic gap. We attribute the ungrammaticality of (30) to the fact that an object case-marked real gap licenses a parasitic gap. In (30), a real gap that is object case-marked does not exist. The same can apply to (31):

- (31) Who_i did you tell e_i [_{CP} that you would visit pg_i]?
 (Kim & Kang 2013)

The grammaticality of (31) is due to the assumption that a trace that is object case-marked licenses a parasitic gap. We thus conclude that in English and Korean, a real gap that is object case-marked is a licensing condition on a parasitic gap.

2.5. The Pronominal Condition

Postal (1994) proposes the following constraint on the distribution of parasitic gaps, following Cinque (1990):

(32) Pronominal Condition

Parasitic gaps cannot occur in positions incompatible with definite pronouns.

Postal (1993) and Overfelt (2016) provide the following examples to show that parasitic gaps are not available from name positions and from the associate position of existential-*there* constructions:

- (33) a. *[What]_i did he name his dog e_i after naming his camel pg_i?
 b. *[What]_i did he look for e_i in the closet without knowing there were pg_i on the table?

Interestingly, Korean parasitic gaps are available from name positions and from the associate position of existential-*there* constructions.

- (34) a. pg_i ku-uy naktaey ilum-ul ciecwunhwuey ku-nun ku-uy kay-eykey e_i
 he-GEN camel name-ACC name after he-NOM he-GEN dog-DAT
 mwelako ilum-ul ciecwuessnunya?
 what name named
 (What did he name his dog after naming his camel?)
 b. pg_i table-ey isstanunkessul alcimothako ku-nun
 on the table there is without knowing he-NOM
 e_i chancangeyse mwuessul hcassnunya?
 closet what looked for
 (What did he look for in the closet without knowing there were on the table?)

This in turn suggests that Postal's constraint does not work for a Korean parasitic gap. We thus conclude that English parasitic gaps cannot be available from name positions and existential-*there* constructions, but Korean parasitic gaps can.

III. METHOD

3.1. The Goals of Experiments

The main goal of this paper is to provide a detailed analysis of the L2 learners' acquisition of parasitic gaps and their constraints. Our experiments have six goals. The first goal is to examine whether the subjects acquired the properties of parasitic gaps or not. The second goal is to evaluate whether or not the subjects acquired categorical restrictions. The third goal is to investigate whether or not the subjects acquired the island

condition. The fourth goal is to confirm whether the subjects learned the adjunct island. The fifth goal is to answer the following question: Can the L2 learners capture the object case-marked trace condition? Finally, the sixth goal is to answer the following question: Do the L2 learners show the order of their acquisition of constraints on parasitic gaps?

3.2. Subjects

Twenty Korean EFL college students participated in our experiment. The subjects are twenty undergraduate students of two private universities in Seoul and the Chungbuk Province in South Korea. We asked the subjects whether eight target sentences and eight Korean sentences are grammatical. In our experiment, we conducted a survey among twenty college students.

IV. RESULTS

In our experiment, we included (35) and (35b) to evaluate the L2 learners' knowledge of parasitic gaps:

- (35) a. *The article was filed e without reading pg.
 b. e ilkcianhko ku-nonmwun-i chelhaycyessta pg.
 without reading the article-NOM filed
 (The article was filed without reading)

In (35a), the second empty category is a parasitic gap since it depends on another gap. As observed earlier, the reason why (35a) is ungrammatical is that an NP trace cannot license a parasitic gap. More specifically, the first empty category is an NP trace of *the article*, which cannot license a parasitic gap. It is a well-known fact that a wh-trace licenses a parasitic gap and it must be object case-marked. It is interesting to note, however, that a Korean parasitic gap can depend on an NP trace even though (35b) is marginal. Thus, English requires only a wh-trace as a licenser, whereas Korean requires a wh-trace and NP-trace as a licenser. The L2 learners' correct responses to (35a) were 30%, whereas their incorrect responses to (35a) were 70%. This in turn suggests that one third of the subjects acquired the fact that a wh-trace licenses a parasitic gap. Only six of the twenty subjects thought of (35a) as grammatical, which indicates that nearly two third did not acquire the fact that a parasitic gap is licensed by a wh-trace. On the other hand, two third of the L2 learners thought of (35b) as grammatical, which suggests that two third accepted the fact that an NP licenses a parasitic gap. This observation clearly shows that Korean is a superset grammar when compared to English since a Korean parasitic gap requires a wh-trace and NP trace as its licenser, whereas an English parasitic gap requires only a wh-trace as its licenser.

In our experiment, we included (36a) and (36b) in order to assess the L2 learners' knowledge of a parasitic gap and a real gap:

- (36) a. Whose uncle did you offend e by not recognizing pg?
 b. pg incenghacianhko ne-nun nwukwu-uy samchon-ul kipwunul sanghakeyhayssni e?
 without recognizing you-TOP Who-GEN uncle-ACC offend
 (Whose uncle did you offend by not recognizing?)

As pointed out by Emonds (1985), E. Kiss (1985), Koster (1987), Cinque (1990), Frampton (1990), Postal (1994), and Overfelt (2016), a parasitic gap and a real gap are necessarily DP. The reason why (36a) is grammatical is that a parasitic gap and a real gap are DP. Likewise, the reason why (36b) is grammatical is that a parasitic gap and its licensing category are DP. The L2 learners' correct responses to (36a) were 60%, whereas their incorrect responses to (36a) were 40%. More than half of the L2 learners acquired the fact that the licensing category of a parasitic gap is DP. It is important to point out, however, that fifteen L2 learners thought of (36b) as ungrammatical. This clearly shows that the L2 learners' responses do not show positive transfer.

We included (37a) and (37b) in order to evaluate the licensing category of a parasitic gap:

- (37) a. *That is the woman to whom I gave my number e without talking to pg.
 b. Ku-pwun-i pg malhacianhko nay-ka nay e penho-lul cwun yeinita.
 That-person-NOM without talking to I-NOM my number-ACC gave woman
 (That is the woman to whom I gave my number without talking to.)

As observed earlier, a PP in Korean can permit a parasitic gap, whereas that that in English cannot. This in turn suggests that the licensing category in Korean can be a DP or PP. The L2 learners' correct responses to (37a) were 50%, whereas their incorrect responses to (37a) were 50%. Half of the L2 learners predicted that a PP in English is not the licensing category of a parasitic gap. This implies that half of the Korean learners of English did not accept a PP as the licensing category. On the other hand, 55% of the L2 learners judged (37b) as grammatical. Note that a PP in Korean can allow a parasitic gap. That nearly half of the Korean learners of

English thought of (37b) as ungrammatical suggests that they do not accept a PP as the licensing category of a parasitic gap. Again, noteworthy is that Korean parasitic gaps require a DP or PP as their licensing category, whereas English parasitic gaps requires only a DP. This in turn suggests that Korean is a superset grammar when compared to English. Further observation confirms the assumption that Korean is a superset language. Korean parasitic gaps allow a VP as their licensing category, whereas English parasitic gaps do not.

In our experiment, we included (38a) and (38b) to assess the fact that Korean parasitic gaps allow a VP as their licensing category, whereas English parasitic gaps do not:

- (38) a. *It was riding a bike that Sam hated e after he tried pg.
 b. pg taponhwuey Sam-i e silhehankess-un cacenke takiyessta.
 tried after NOM hated-TOP a bike riding
 (It was riding a bike that Sam hated after he tried.)

As observed earlier, English parasitic gaps allow only a DP as their licensing category. It is significant to note that the displacement of a VP fails to permit a parasitic gap. However, Korean shows the opposite. Korean parasitic gaps can allow a VP as their licensing category. The L2 learners' correct responses to (38a) were 25%, whereas their incorrect responses to (38a) were 75%. This in turn indicates that only one fourth of the L2 learners acquired the fact that in English, a VP cannot be the licensing category of a parasitic gap. It is important to note that Korean parasitic gaps can allow a DP, PP, and VP as their licensing category, whereas English parasitic gaps allow only a DP. This suggests that clearly Korean is a superset language when compared to English. The properties of Korean grammar include those of English grammar. When it comes to (38a), it is interesting to note that 15 L2 learners thought of (38a) which is ungrammatical as grammatical. We wish to argue that this happened due to transfer. That is, the L2 learners looked for similarities in Korean grammar and English grammar. According to Ringbom (2007), "learners look for similarities whenever they can find them and transfer can take place as a result of both similarity and difference and it is similarity that is more important" (Ringbom 2007).

In our experiment, we included (39a) and (39b) to evaluate the island condition:

- (39) a. *This is the sandwich which Kim won't eat e because she knows who makes pg.
 b. Ikess-un nwu-ka pg mantununci kunye-ka alkittaymwuney Kim-i e mekcianhul sandwich-ita.
 this-NOM who-NOM make she-NOM know because NOM won't eat be
 (This is the sandwich which Kim won't eat because she knows who makes.)

As illustrated in (39a), English parasitic gaps cannot appear inside a wh-island, which results in the ungrammaticality of (39a). On the other hand, Korean parasitic gaps can occur inside a wh-island corresponding to an English wh-island. The L2 learners' correct responses to (39a) were 20%, whereas their incorrect responses to (39a) were 80%, which indicates that only one fourth acquired the fact that a parasitic gap cannot appear inside a wh-island. It is important to note that a wh-island has a marked property. According to Crystal (1996), "a marked property is one which goes against the general tendencies. In Chomskyan theory (Chomsky 1981, 2019a, 2019b), an unmarked structure bears a universal property. Ellis (2015) points out that "marked structures are those that lie outside Universal Grammar" (Ellis 2015). Thus, we argue that the order of the acquisition of unmarked structures and marked structures is unmarked structures first and then marked structures. The reason why the L2 learners' correct responses to (39a) were 20% may be that a wh-island has a marked property.

In our experiment, we included (40a) and (40b) to evaluate an adjunct island:

- (40) a. *It was Tim who Pam hired e because the committee couldn't make a decision after interviewing pg.
 b. pg interview-lul hanwu wiwonhoy-ka kyelcyenghalswu epseskittaymwuey Pam-i e
 koyonghayssten
 ACC after committee-NOM decide could not because NOM hired
 salam-un Tim-iessta.
 person-NOM be
 (It was Tim who Pam hired because the committee could not make a decision after interviewing.)

As alluded to in (40a), English parasitic gaps cannot occur inside an adjunct island. Note that English parasitic gaps cannot appear inside a relative clause, a wh-island, or an adjunct. On the other hand, Korean parasitic gaps can occur inside a wh-island, or an adjunct. Again, this suggests that the properties of Korean grammar with respect to parasitic gaps include those of English grammar. Simply put, Korean is a superset grammar when compared to English. The L2 learners' correct responses to (40a) were 30%, whereas their incorrect responses to (40a) were 70%. On the other hand, 95% of the L2 learners thought of (40b) as

grammatical. Most importantly, 14 subjects judged (40a) which is ungrammatical as grammatical. We wish to argue that this took place in terms of transfer. We wish to argue that in judging whether (40a) is grammatical, the Korean learners of English relied on their L1. It is noteworthy that an adjunct island has a marked property. A marked property impedes L2 learning. This is why the L2 learners' correct responses to (40a) were 30%. We included (41a) and (41b) in order to evaluate the object case-marked trace condition:

- (41) a. Who did you tell e that you would visit pg?
b. pg pangmwunhalkessilako ne-nun e nwukwu-eykey malhayssnunya?
will visit you-TOP who-DAT said
(Who did you tell that you would visit?)

As the status of (41a) suggests, an English parasitic gap depends on a trace that is object case-marked. (41a) and (42b) are grammatical since a trace that is object case-marked exists. The L2 learners' correct responses to (41a) were 75%, whereas their incorrect responses to (41a) were 25%. This in turn indicates that nearly three fourth of the L2 learners acquired the fact that a parasitic gap is subject to the object case-marked condition. Most importantly, 85% of the L2 learners thought of (41b) as grammatical. This seems to suggest that the L2 learners entertain the UG theory (Chomsky 1981, 2019a, 2019b) that "learners have complete access to Universal Grammar" (Ellis 2015). However, Chomsky's zero transfer position that learners do not need to rely on their L1 cannot explain why the percentage of the L2 learners' correct responses to (35a), (36a), (37a), (38a), (39a), and (40a) were quite low, compared to Korean examples. This implies that the L2 learners do not lend their support to Chomsky's zero transfer position. Rather, the results from the L2 learners respect the hypothesis that L2 learners look for similarities in L1 and L2 (Ringbom 2007).

Finally, in our experiment, we included (42a) and (42b) to assess the pronominal condition:

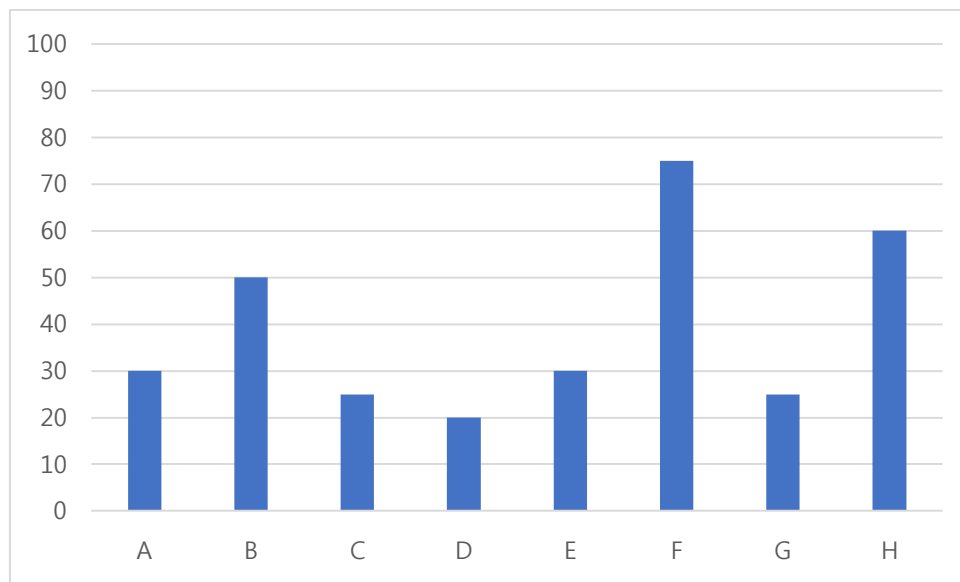
- (42) a. *What did he name his dog after naming his camel?
b. Ku-uy naktaey ilum-ul ciewunhwuey ku-uy kayeykey mwelako ilum-ul ciewuessnunya?
he-GEN camel name-ACC after name he-GEN to a dog what name-ACC name
(What did he name his dog after naming his camel?)

English parasitic gaps are not available from name positions, but Korean parasitic gaps are available from name positions, as illustrated in (42b). The L2 learners' correct responses to (42a) were 25%, whereas their incorrect responses to (42a) were 75%. On the other hand, 80% of the L2 learners judged (42b) as grammatical, whereas 20% of the L2 learners judged (42b) as ungrammatical. We attribute the high percentage of the L2 learners' incorrect responses to (42a) to transfer. This means that the L2 learners rely on their L1 in learning L2. Again, the L2 learners do not entertain Chomsky's zero transfer position.

V. DISCUSSION

Let us turn to the order of the L2 learners' acquisition of constraints on parasitic gaps. First, 30% of the L2 learners acquired the *wh*-trace condition. Second, 60% of the adult subjects acquired the DP condition that a parasitic gap and a real gap must be a DP. Third, 50% of the Korean learners of English acquired the condition that a PP in English cannot permit a parasitic gap. Fourth, 25% of the adult subjects acquired the condition that a VP cannot permit a parasitic gap. Fifth, 20% of the L2 learners acquired the *wh*-island condition that English parasitic gaps cannot appear inside a *wh*-island. Sixth, 30% of the Korean learners of English acquired the condition that English parasitic gaps cannot occur inside an adjunct island. Seventh, 75% of the L2 learners acquired the condition that an English parasitic gap must depend on a trace that is object case-marked. Finally, 25% of the adult subjects acquired the condition that English parasitic gaps are not available from name positions (the pronominal condition).

Table 1 The percentage of the acquisition of parasitic gaps



- A: The wh-trace condition
- B: The PP condition
- C: The VP condition
- D: The wh-island condition
- E: The adjunct island condition
- F: The object case-marked condition
- G: The pronominal condition
- H: The DP condition

This graph clearly shows that the object case-marked condition was first acquired by the Korean learners of English, followed by the DP condition, the PP condition, the wh-trace condition and the adjunct island condition, the VP condition and the pronominal condition, and the wh-island condition, in that order.

Now let us turn our attention to markedness. We wish to argue that it has to do with the order of the acquisition. A marked property impedes L2 learning. As indicated in Table 1, the wh-island condition (D) is the most marked, followed by the VP condition (C) and the pronominal condition (G), and the wh-trace condition and the adjunct island condition (E), in that order. On the other hand, the object case-marked condition (F) is the most unmarked, followed by the DP condition (H), and the PP condition, in that order. The percentage of the acquisition of parasitic gaps will be high if the structure has an unmarked property, whereas that of the acquisition of parasitic gaps will be low if the structure has a marked property. This in turn indicates that a marked property impedes L2 learning. As illustrated in Table 1, the wh-island condition has the most marked property, whereas the object case-marked condition has the most unmarked property. In Chomsky’s theory, an unmarked structure bears a universal property, whereas marked structures are “those that lie outside Universal Grammar” (Ellis 2015). If this hypothesis is on the right track, the object case-marked condition (F) and the DP condition (H) are those that bear a universal property. On the other hand, the wh-island condition (D), the VP condition (C), and the pronominal condition (G) are those that lie outside Universal Grammar.

Now let us consider the relationship between the acquisition of parasitic gaps and UG (Chomsky 1981, 2019a, 2019b). When it comes to the object case-marked condition (F) and the DP condition (H), the L2 learners seem to entertain the UG theory that “learners have complete access to Universal Grammar” (Ellis 2015). However, as for the wh-island condition (D), the VP condition (C), and the pronominal condition (G), the L2 learners do not entertain Chomsky’s UG theory.

Finally, we wish to argue that Korean is a superset grammar when compared to English with respect to parasitic gaps. English parasitic gaps are subject to the PP condition, the VP condition, the wh-island condition, the adjunct island condition, and the pronominal condition, whereas Korean parasitic gaps are not subject to these conditions. This in turn indicates that Korean is a superset grammar when compared to English. This is why the percentage of the L2 learners’ incorrect responses is high. This in turn suggests that the L2 learners will have difficulty acquiring these specific conditions Korean does not bear.

VI. CONCLUSION

The main purpose of this paper is to provide a detailed analysis of the L2 learners' acquisition of parasitic gaps and their constraints. In section 2, we have argued that some examples are incompatible with the anti-command requirement. We have further argued that the licensing category of an English parasitic gap is only a DP, whereas the licensing category of a Korean parasitic gap is a DP, PP, and VP, but not an AP. We have maintained, on the other hand, that an English parasitic gap is subject to a wh-island and an adjunct island, whereas a Korean parasitic gap is not subject to these conditions. It is important to note that in English and Korean, the object case-marked condition is one of licensing conditions on a parasitic gap. In addition, we have contended that English parasitic gaps cannot be available from name positions and existential-*there* constructions, but Korean parasitic gaps can. In section 3, we have elucidated the six goals of our experiment and provided information about the subjects. In section 4, we have argued that Korean is a superset grammar when compared to English since a Korean parasitic gap requires a wh-trace and NP trace as its licensor, whereas an English parasitic gap requires only a wh-trace as its licensor. Additionally, we have maintained that the L2 learners looked for similarities in Korean grammar and English grammar. We have contended, on the other hand, that the order of the acquisition of unmarked structures and marked structures is unmarked ones first and then marked ones. We have argued that English parasitic gaps cannot appear inside a relative clause, a wh-island, or an adjunct. On the other hand, Korean parasitic gaps can occur inside a wh-island, or an adjunct. Again, this suggests that the properties of Korean grammar with respect to parasitic gaps include those of English grammar. We have further argued that Chomsky's zero transfer position that learners do not need to rely on their L1 cannot explain why the percentage of the L2 learners' correct responses to English parasitic gaps is quite low. In section 5, we have contended that the object case-marked condition was first acquired by the Korean learners of English, followed by the DP condition, the PP condition, the wh-trace condition and the adjunct island condition, the VP condition and the pronominal condition, and the wh-island condition, in that order. In addition, we have maintained that a marked property has to do with the order of the acquisition. It impedes L2 learning. Finally, we have contended that the object case-marked condition and DP condition are those that bear a universal property, whereas the wh-island condition, the VP condition, and the pronominal condition are those that lie outside Universal Grammar.

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A Survey

Answer whether or not each sentence is grammatical.

- (1) a. The article was filed without reading?

- b. ilkcianhko ku-nonmwun-i celhaycessta.
- (2) a. Whose uncle did you offend by not recognizing?
b. Nwukwu-uy samchon-ul incenghacianhko ne-nun kipwunul sanghakeyhayssni?
- (3) a. That is the woman to whom I gave my number without talking to.
b. Ku-pwun-i malhacianhko nay-ka nay penho-lul cwun yeinita.
- (4) a. It was riding a bike that Sam hated after he tried.
b. Taponhwuey Sam-i silhehankess-un cacenke takiyessta.
- (5) a. This is the sandwich which Kim won't eat because she knows who makes.
b. Ikess-un nwu-ka mantununci kunye-ka alkittaymwuney Kim-i mekcianhul sandwich-ita.
- (6) a. It was Tim who Pam hired because the committee couldn't make a decision after interviewing.
b. Interview-lul hanwu wiwonhoy-ka kyelcyenghalswu epseskittaymwuey Pam-i koyonghayssten salam-un Tim-iessta.
- (7) a. Who did you tell that you would visit?
b. Pangmwunhalkessilako ne-nun nwukwu-eykey malhayssnunya?
- (8) a. What did he name his dog after naming his camel?
b. Ku-uy naktaey ilum-ul ciecunhwuey ku-uy kayeykey mwelako ilum-ul ciecwuessnunya?

Namkil Kang. "Constraints on Parasitic Gaps and their Acquisition." *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 26(02), 2021, pp. 33-43.