



Pragmatic Influence in Processing L2 English Reflexive Pronouns by Korean Learners of English

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Abstract

Within the emergentist framework, which posits simple processors such as structure-based sentence-level processor and pragmatic processor at the heart of language processing, English reflexive pronoun interpretation by native Korean learners of L2 English is examined using the same test sentences in two different conditions: 1) within a single isolated sentence; and 2) within a larger story-based context. Results demonstrated that highly proficient learners tended to process English reflexives using sentence-based processor in the first condition as native speakers would, whereas the pragmatic processor seemed to interfere in the second condition leading to illicit interpretation. On the other hand, low proficiency learners did not show much difference in their English reflexive interpretations under the two conditions. Thus, contextual information influenced the way L2 English reflexive pronouns were interpreted and the degree of influence seemed to depend on L2 English proficiency levels. This observation on the development process of L2 English reflexives suggests that L2 learners ultimately settle on the sentence-level processor at the expense of a weakening pragmatic processor after starting out as competition between the two processors. Implications for classroom instruction involving English reflexive pronouns are also suggested.

INTRODUCTION

Interpreting reflexive pronouns has been important to differing approaches to language since Chomsky (1981) introduced the Binding Theory, a part of generative grammar framework for explaining coreference, the relationship between words or phrases that refer to the same entity. Structural constraints in this tradition can be instantiated by the English reflexive pronoun *herself* in (1) coreferenced to only *Susan* because an English reflexive pronoun requires a local c-commanding antecedent, confirmed by native English speakers' performance in previous research (e.g., Nicol & Swinney, 1989; Sturt,

2003). On the other hand, in (2), the Korean equivalent of (1), Korean reflexive pronoun *caki* additionally allows a long-distance antecedent resulting in both the long-distance Mary and the local Susan as legitimate candidates for coreference. As a part of Chomsky's Universal Grammar (UG), the Binding Theory proposed universal constraints on how pronouns and reflexives function across languages, contributing to a deeper understanding of the syntactic structure of language and how children can acquire language without much difficulty as they are predisposed to learn the core principles of coreference even if they are not explicitly taught.

(1) Mary_i thought that Susan_j hurt herself_{*ij}.

(2) Mary_i-ka [Susan_j-i caki_{ij}-lul aphukeyhanta-ko] saynggakhan-ta
 Mary-Nom Susan-Nom caki-Acc hurt-Rel think-Decl
 Mary thought that Susan hurt herself.

Besides the UG-based syntactic theories such as the Governing Category Parameter (Wexler & Manzini, 1987), the Movement to INFL approach (Battistella, 1989), and the Relativized Subject approach (Progovac, 1993), other approaches to reflexive pronoun interpretation exist. Alternative accounts to the abovementioned syntax-based theories include the emergentist approach (O'Grady, 2005, 2013), the Revised Neo-Gricean Pragmatic Theory of Anaphora (Huang, 2000), and the Emergentist Reflexives Approach (Sperlich, 2020), which focus on non-syntactic factors such as processing and pragmatics. Although the details of these theories will not be outlined here as they are not included in the scope of this research, some background of the non-syntactic approaches will be provided as this study aims to investigate how a pragmatic factor may influence L1 Korean learners of English interpret English reflexive pronouns, leading them to use different strategies depending on the task conditions.

Since languages differ in their ways of interpreting reflexive pronouns, it seems natural that research on reflexive pronoun interpretation has extended to the field of second language acquisition (SLA). Among research that investigated the problem of anaphor interpretation in SLA, some demonstrated the role of L1 influence in interpreting reflexive pronouns in L2 (e.g., Kim & Joo, 2021) or the lack thereof (e.g., Felser & Cunnings, 2012; Thomas, 1989) and even mixed results (e.g., Chen & Ionin, 2023). For the purpose of this paper, studies such as Felser & Cunnings (2012) is worth noting as they reported that German-speaking learners of L2 English coreferenced English reflexives with discourse-prominent antecedents even though their L1 German prioritizes syntactic binding like English does, and thereby doubting L1 influence. Instead, discourse-level factors such as first mention and frequency of mention are emphasized in L2 reflexives interpretation, and thus, supporting the possible existence of simultaneously operating multiple processing pathways (e.g., Ferreira et al., 2002).

Thus, this paper intends to examine how English reflexives are interpreted by native Korean learners of English in two different conditions, which can demonstrate the different processing mechanisms involved in L2 reflexive pronoun interpretation. An environment for reflexive interpretation based on syntax is provided in one condition and room for context-based pragmatic interpretation is given in the other condition. This research can be deemed meaningful in that the shift in the processing mechanisms employed in the two condition can be observed from the participants who are tested twice using the same test sentences.

BACKGROUND

Research probing structural and pragmatic factors that affect pronoun interpretation exists (e.g., Felser et al., 2009; Felser & Cunnings, 2012; Kim et al., 2015; Roberts et al., 2008), but relatively little attention has been given to the role of these nonstructural factors and the mental processes that underlie L2 learners' reflexive pronoun interpretation. In this paper, as an attempt to examine the role of pragmatic factors underlying English reflexive pronoun interpretation, Korean EFL learners' interpretation of L2 English reflexives will be investigated in two conditions. Additionally, the processing mechanisms that can account for their different performance in the two conditions including contributing factors such as L1 influence will be discussed.

First, a brief background concerning how reflexives can be interpreted differently in the two languages involved, L1 Korean and L2 English, needs to be provided. A key difference between English and Korean reflexive pronouns stems from the location of their antecedent NPs. As mentioned above in (1) and (2), the antecedent for an English reflexive pronoun typically occurs in the same minimal clause as the pronoun, while no such constraint exists in Korean. The emergentist approach and the well-known basic UG-based approach each provide accounts as to why such different properties regarding reflexive pronoun interpretation exist and how those different properties are acquired in the course of L1 and L2 acquisition.

The UG-based answer is founded upon the inborn system of grammatical principles that permits variation across languages via parametric options. Simply put, an English reflexive pronoun should be coreferenced to a c-commanding antecedent in its local domain: refer to research such as Kim et al. (2015) for an overview of binding approaches. However, the choice of antecedents for Korean reflexives is not limited to the local domain. Therefore, parameter setting is an important part of the language acquisition process (e.g., Ayoun, 2005). On the other hand, the so-called ‘emergentism,’ which posits that simple processors interacting with factors such as working memory, pragmatics, social pressures, and other aspects of cognition lies at the heart of the language faculty (O’Grady, 2005, 2013), suggests alternative answers to the above questions. It suggests that two different types of processors, syntactic and pragmatic, are involved; reflexive pronouns in East-Asian languages such as Korean (O’Grady, 2013), Chinese (Huang, 2017), and Japanese (Sperlich, 2021) are pragmatically regulated, while English is a syntax-driven language.

O’Grady’s (2013) proposal regarding how reflexive pronouns are processed in English and Korean is presented in more detail as it is central to the main argument and experiment design of this paper. He claims that there are at least two levels of processing involved in order to understand even the simplest sentence such as *He ate it*: sentence-level (or structural) processing and pragmatic processing.¹ The sentence-level processor focuses on the form of the sentence that includes the lexical properties of its component words, their morphological forms, and their linear relationship. Thus, the sentence-level processor concludes that the sentence *He ate it* describes an eating event, where the agent is the referent of *he* and the theme is the referent of *it*. At the same time, the pragmatic processor deals with the setting, the topic, the relationship between the speaker-listener, etc. When the pragmatic processor encounters the sentence *He ate it*, it focuses on identifying who *he* refers to and what *it* refers to, neither of which can be detected from the construction of the sentence itself.

Although these two processors are simultaneously operating whether an English sentence or a Korean sentence is being processed, the two languages differ in which processor they prioritize in interpreting reflexive pronouns. O’Grady suggests that English largely depends on the sentence-level processor, while Korean mostly utilizes the pragmatic processor to interpret reflexive pronouns. For example, in (3), if we only focus on the embedded clause for the sake of simple presentation, when the transitive verb *trust* is encountered and identified as the predicate, *Richard’s brother* is identified as the first argument, the subject. Then the sentence-level processor encounters *himself*, identifying it as the second argument, the object. Since *himself* is an anaphor, it introduces a referential dependency, and the pressure from working memory leads to the need of the dependency to be resolved quickly and efficiently as possible. The effects of this pressure from the working memory are crucial for understanding how English reflexive pronouns are processed. Thus, the locality property appears as the English sentence-level processor seeks the immediate opportunity for reflexive pronoun interpretation, which is selecting the local antecedent (regardless of context or pragmatic felicity). The c-command property also stems from the way the English sentence-level processor operates. In order for the processor to immediately resolve the referential dependency of *himself*, the first and only other argument of the predicate must be selected as antecedent, which is *Richard’s brother*, not *Richard* (*Richard* is not an argument of the predicate *trust*). This account is in line with the generalization of formal syntax research (e.g., Pollard & Sag, 1992; Reinhart & Reuland, 1991).

(3) Robert thinks [S [Richard’s brother] trusts himself].

On the other hand, the pragmatic processor is mainly responsible for the interpretation of Korean reflexive pronoun *caki*. Although *caki* is argued to exhibit a strong subject orientation (Han et al., 2010; O’Grady, 1987), it can take a non-local antecedent that lacks a c-commanding relationship. Unlike English, in which there is pressure from the working memory to resolve the referential dependency of the reflexive pronoun quickly and efficiently, Korean reflexive pronouns are under pressure to resolve the dependency by selecting an antecedent that is prominent in the discourse or the context. Therefore, factors involved in the interpretation of *caki* include the likes of discourse coherence, empathy, and logophoricity that are beyond sentence-level syntax and require pragmatic processing. Therefore in (4), the Korean equivalent of English (3), *caki* is not compelled to refer to the local antecedent although it could. It could also refer to the long-distance antecedent, *Robert*, if it is pragmatically more felicitous.

(4) Robert-ka [S [Richard-uy dongsayng-i] caki-lul mitnun-ta] saynggakhanta
 Robert-Nom Richard-Poss brother-Nom caki-Acc trust-Rel think-Decl
 Robert thinks Richard’s brother trusts himself.

¹ O’Grady (2005) used the term sentence processor to refer to the system that deals with syntactic relations. However, in this study, the term sentence-level processor following O’Grady (2013) will be used. Pragmatic processor following Huang (2000) refers to the system dealing with the pragmatic relations.

Overall, the two languages employ different processing strategies in interpreting reflexive pronouns; the sentence-level processor selects the local c-commanding antecedent in English, while the pragmatic processor allows a wider range of pragmatically felicitous antecedents in Korean.² O'Grady continues his discussion with how reflexives are acquired in English. Based on Chien & Wexler (1990), it can be concluded that even three-year-olds correctly identify the antecedents for English reflexive pronouns. Then, incorporating the eye-tracking experiment result in Clarkson et al. (2011), O'Grady argues that the acquisition process begins with a competition between the two processors. Although the sentence-level processor dominates English reflexive pronoun interpretation early on (by around age three), the pragmatic processor is not fully suppressed until later (by around age 12). Therefore he suggests that language acquisition can be considered as processing improvement; in case of English reflexive pronoun interpretation, it is basically the gradual strengthening of the sentence-level processing at the expense of pragmatic processing until the weak latter is totally suppressed.

If the emergentist account is on the right track, L1 Korean users predominantly utilize the pragmatic processor when interpreting Korean reflexive pronouns, which can be carried over to L2 English reflexive pronoun interpretation in the early stages of L2 acquisition. However, as their L2 proficiency increases, the pragmatic processor can be expected to be suppressed and switch to sentence-level processing when using the L2 English even if the pragmatic processor is still at work to a certain degree. Thus, the L2 English reflexives acquisition process by L1 Korean users can be viewed as learning to use the sentence-level processor as the main tool for interpreting English reflexives by suppressing the pragmatic processor used for their L1. Unless they reach a native-like English proficiency level, the pragmatic processor can be expected to exert its influence if the appropriate opportunity is provided. In fact, even proficient L2 English learners are reported to experience difficulty finding the structurally correct antecedent in processing tasks probably due to the relative discourse prominence of another potential antecedent (Felser et al., 2009). This suggests that L2 learners may have limited ability using structural cues in processing, which can be compensated by the use of nonstructural cues such as discourse prominence, plausibility, and world knowledge (Clahsen & Felser, 2006).

In this research, Korean EFL learners will be tested on their ability to correctly interpret English reflexives using only structural cues. Then, this result will be compared to their L2 reflexive interpretation when the environment for potential activation of the pragmatic processor is provided. This comparison can allow us to examine how the Korean participants' English reflexive interpretation might differ in two different conditions and subsequently observe whether the strengths of the two different processors can change in each condition as the emergentist approach predicts. It should be noted that while the aforementioned literature mostly analyze on-line processing data, the current research collected only off-line data. Still, there is reason to assume that data from off-line and on-line tasks render similar results. Kaiser et al. (2009) conducted an off-line picture-choosing experiment followed by an on-line eye-tracking experiment using similar stimuli regarding pronoun and reflexive pronoun interpretation in 'picture noun phrases' (e.g., *Andrew's picture of him/himself*). The picture choice results from the on-line experiment closely resembled those from the off-line experiment, demonstrating that the findings of the off-line and on-line experiments coincide.

CURRENT STUDY

Experimental Design

Two experiments were designed, modified from Zhan (2024), to survey how Korean learners of L2 English interpret English reflexive pronouns in isolated sentences and in the presence of prior context. In the first experiment, test items consisted of an isolated single declarative sentence including a reflexive pronoun followed by a yes-no question asking about the referent of the reflexive pronoun in the test sentence. It was hypothesized that participants with relatively high level of English proficiency would perform well demonstrating the use of sentence-level processor when interpreting reflexives and the performance would decrease as the participants' proficiency decrease. Then, the second experiment was a truth-value judgement task, in which test items consisted of a five-sentence story followed by a statement about the story that included

² O'Grady notes that pragmatic processing, the default strategy in Korean, is employed in English if the sentence-level processor cannot arrive at an appropriate immediate interpretation in the usual way as in the following example, where *himself* refers to *Richard* although *Richard* is not the local c-commanding antecedent. Similar observations in which the highly discourse-prominent antecedent, which is not the local c-commanding antecedent, is considered for coreference by native English speakers are reported in studies such as Sturt (2003) and Badecker & Straub (2002).

[Richard's diary] mentioned an unsavory rumor about **himself**.

a reflexive pronoun. It was expected that the story in experiment 2 would provide a context that would facilitate the use of the pragmatic processor across all proficiency levels (as long as their native-level Korean proficiency is maintained), which would result in more illicit interpretation of English reflexives than in experiment 1³: for example, those who demonstrated perfect English reflexive interpretation in experiment 1 might err in experiment 2.

Experiment 1: Isolated sentence-based yes-no question

A test sentence including the reflexive pronoun and two possible antecedents, local antecedent and long-distance antecedent, is given as in (5). Then, a yes-no question followed which indirectly asked if the reflexive pronoun refers to the long-distance antecedent. A ‘yes’ response indicates that the respondent suppressed the sentence-level processor and considered the reflexive pronoun in the test sentence to be bound to its long-distance antecedent, which is illicit in English. If the sentence-level processor is dominant, participants would choose the correct response to the question, ‘no,’ demonstrating that the reflexive pronoun is bound to its local antecedent. Experiment 1 consisted of seven such test items and 13 filler items not including reflexives as in (6), resulting in a total of 20 items. Since the correct response for the seven test items are ‘no,’ the questions of the filler items were mostly designed to elicit a ‘yes’ response in order to balance the number of ‘yes’ and ‘no’ responses. Two filler items were placed between test items. Refer to the Appendix A for a full list of items used experiment 1.

(5) David said that Joe protected himself. Q: Did Joe protect David?

(6) Ryan gave his parents a book that Karl wrote. Q: Did Karl write a book?

Experiment 2: Story-based truth-value judgement task

The same test sentences in experiment 1 were given each following a five-sentence story as in (7): the underlined test sentence at the end is the exact sentence provided in (5) above for experiment 1. Participants were asked to judge whether the test sentence is ‘true’ or ‘false’ based on the story. The story provided a clear context for the test sentence to be determined as ‘false’ if the reflexive pronoun in the test sentence is correctly interpreted to be coreferenced with the local antecedent thanks to the sentence-level processor. A ‘true’ response would indicate that the participant coreferenced the reflexive pronoun with the illicit long-distance antecedent probably due to the interference of the pragmatic processor activated by the context provided in the story. As in experiment 1, experiment 2 consisted of a total of 20 items including seven test items and 13 filler items such as (8): like the test items, the underlined sentence in (8) is the same test sentence used in (6) for experiment 1 above. Since the correct response for the seven test items are ‘false,’ the filler items were mostly designed to elicit a ‘true’ response in order to balance the number of ‘true’ and ‘false’ responses. Two filler items were placed between the test items. Refer to the Appendix B for a full list of items used experiment 2.

(7) David and Joe are best friends.
David is the smallest boy and Joe is the strongest boy in their high school.
Recently, some boys were bullying David at school.
When Joe found out about it, he protected David, and the bullying never happened again.
David told his parents about it, and David’s parents thanked Joe.
David said that Joe protected himself.

(8) Ryan and Karl have been best friends since they were young.
Recently, Karl published a book he was writing for a few years.
Ryan was so happy and proud of his friend.
So Ryan bought 10 copies of Karl’s book.
Then Ryan gave the book to his parents and coworkers at his job.
Ryan gave his parents a book that Karl wrote.

³ Gračanin-Yuksek et al. (2017) conducted their research using a similar experiment design to examine how Turkish anaphors are interpreted in isolated sentences and within larger discourse contexts. However, unlike the current research, they explicitly asked who the pronoun refers to in the given single target sentence in the first experiment, and the context in the second experiment was provided through a dialogue followed by the same type of target sentence and question as in the first experiment.

Participants and Procedure

The participants in this study were 80 native Korean-speaking university students registered in three introductory level English linguistics courses managed by the author. In the courses, explicit lesson on English reflexive pronouns was not given at all or until all the experiments were concluded. The students were asked to participate twice, with approximately two to three weeks interval between the two experiments. In the first experiment, they were asked to provide personal information including age, experience living abroad, and official English test scores before answering the experiment items. For most participants, it took no more than 20 minutes to complete each of the two experiments. In the end, nine participants, whose correct response rates for the filler items in experiment 2 were lower than 75% (nine or less out of 13 filler items), were excluded from further analysis as they were considered (at least at the moment of participating) to lack the appropriate level of English competency to understand the given short filler stories, resulting in a total of 71 participants. Their average age were 20;1, ranging from 18;3 to 26;11, as many of the participants were freshman students. Except for two students who had an experience of living in an English-speaking country for six months, none of the participants stayed in an English-speaking country besides short-term travels. As for the participants' official English test scores, only seven reported a TOEIC score, while others provided their English band scores from the Korean College Scholastic Ability Test (KCSAT) or reported no official English score. Table 1 demonstrates the participants' self-reported official English test scores according to the three proficiency groups as will be described shortly. In addition, 15 adult monolingual speakers of English residing in the U.S. participated through online surveys as the control group.

TABLE 1
Korean Participants' Official English Test Scores

Groups (No.)	KCSAT band 1	KCSAT band 2	KCSAT band 3	KCSAT band 4	KCSAT band 5	TOEIC
Level 1 (30)	2	8	11	2	2	785, 850, 870
Level 2 (24)	1	4	9	1	2	600
Level 3 (17)	0	1	3	3	1	280, 500, 660

Note. Since some participants did not provide any official test scores, the sum of each group does not add up to the total number of participants in each group.

Since one of the main purposes of this research was to investigate whether Korean learners of L2 English would use different processing strategies for English reflexive interpretation in different conditions, grouping the participants based on experiment 1 result seemed more useful and logical than to group them based on their overall English proficiency. Although previous research mostly group participants based on their overall language proficiency as typically represented by official language test scores, this research particularly aimed to compare the English reflexive pronoun interpretation strategies that might differ depending on the given tasks. It must be noted, however, that because the criteria for such grouping is not the overall English proficiency, even significant differences in the between-group performances do not necessarily imply the successful change in processing strategies with increasing English proficiency, which will be further discussed later. Thus, their experiment 1 scores were used as the criterion to place the 71 participants into three groups; since there were seven test items, 30 students who scored perfectly seven out of seven were regarded as Level 1, 24 students who scored six out of seven were considered Level 2, while the other 17 students who scored five or less out of seven were grouped as Level 3. Placing together the participants who performed similarly in experiment 1 into the same groups would provide an opportunity to effectively and clearly examine how their strategies might differ when dealing with the tasks given in the two experiments. Thus, although it cannot be claimed that each group represents a certain level of overall English proficiency, we can assume that Level 1 participants predominantly used the sentence-level processor in experiment 1, while Level 3 participants were inconsistent in the strategy they employed, making use of both the sentence-level and pragmatic processors.

RESULTS

Table 2 summarizes the experiment 1 and experiment 2 results of the control group and three experiment groups. Level 1 participants, who all selected the correct antecedents for English reflexives (seven out of seven) in experiment 1, showed decrease in their performance in experiment 2 as they were able to select on average only about 5.5 correct antecedents

among seven. Likewise, Level 2 participants, who all selected six correct antecedents in experiment 1, were able to choose only about 4.9 correct antecedents on average. On the other hand, Level 3 participants showed a slight increase in the average number of correct choices from about 4.4 in experiment 1 to 4.8 in experiment 2. As for the English native-speaking control group, all the participants performed perfectly in experiment 1, and two of them scored six, while the rest scored perfectly in experiment 2.

TABLE 2
Results of Experiments 1 and 2

Groups	Number of participant	Experiment 1 score average / SD	Experiment 2 score average / SD
Level 1	30	7 / 0	5.47 / 2.19
Level 2	24	6 / 0	4.92 / 2.43
Level 3	17	4.41 / 0.88	4.82 / 3.78
Control	15	7 / 0	6.87 / 0.12

Note. Since all Level 1 and Level 2 participants scored seven and six, respectively, in experiment 1, the standard deviations for the two groups were zero. The same can be said for experiment 1 control group result.

Statistical analysis was performed only among the L2 groups as it was obvious that the control group was nearly flawless in employing the sentence-level processor in both conditions. One-way Welch's ANOVA was conducted to investigate whether the difference between the performances of the three groups is significant. Welch's ANOVA was used because the assumption of homogeneity of variances, which is required for a regular ANOVA, is not satisfied in this data set due to the unequal number of participants in each group. As for the experiment 1 results, which were the criteria for grouping the participants, the Welch's ANOVA demonstrated a statistically significant difference between the, $F(2, 69) = 166.09, p < 0.0001$. Then, a post-hoc Tukey's HSD test was conducted to determine which pairs of groups differed significantly from each other. The results of the Tukey's HSD test revealed that Level 1 students scored significantly higher than Level 2 and Level 3 students, $p < 0.001$, and Level 2 students scored significantly higher than Level 3 students, $p < 0.001$.

Then, statistical analysis for experiment 2 scores was conducted. The results of the Welch's ANOVA demonstrated a statistically significant difference between the groups on their experiment 2 performances, $F(2, 69) = 4.12, p < 0.05$. Then, a post-hoc Tukey's HSD test result revealed that Level 1 students scored significantly higher than Level 2 and Level 3 students, $p < 0.05$. However, there was no statistically significant difference in experiment 2 scores between Level 2 and Level 3 students.

Despite the overall result indicating significant difference in the experiment 2 performance between some of the groups, the primary aim of this research was to probe whether the context, which was lacking in experiment 1 but provided in experiment 2, influences the interpretation of English reflexive pronouns by Korean-speaking learners of L2 English. Therefore, it is crucial to compare experiment 1 and experiment 2 scores to examine whether the participants in each group used a different strategy to process English reflexive pronouns in the two conditions. Paired-sample t-tests were conducted to compare the scores of experiments 1 and 2 from each group, and the results demonstrated that Level 1 and Level 2 participants scored significantly lower in experiment 2 (Level 1: $t(29) = 5.68, p < 0.001$ / Level 2: $t(23) = 3.41, p < 0.005$), while there was no significant difference between the two scores of Level 3 participants.

DISCUSSION

Two experiments were conducted to examine whether the structural coreference constraints on reflexive pronoun interpretation would be influenced by pragmatic factors when English reflexives are interpreted by Korean EFL learners. More specifically, this paper aimed to probe whether the same learners would change their reflexive pronoun interpretation strategies depending on the given task as predicted based on the emergentist approach. Therefore, in experiment 1, opportunities to interpret reflexive pronouns in a single isolated sentence with two possible antecedents, local and long-distance, were provided, where activation of the sentence-level processor was expected. In the following experiment 2, an environment to facilitate the pragmatic processor was provided by short stories, in which the contexts favored the illicit long-distance referents for the reflexives in the same test sentences used in experiment 1.

The results demonstrated that the participants who successfully applied the sentence-level processor (Levels 1 and 2 who

scored at least six correct out of seven) in the single isolated sentence condition shifted to pragmatic processing strategy when interpreting a significant number of the same test items in the story condition. On the other hand, Level 3 participants who were not able to apply the sentence-level processor on a consistent basis in the single isolated sentence condition did not show a significant difference when contexts were provided.

Shifting Processors Depending on the Task

The results of the experiments in this study can be accounted for by the emergentist account on how the sentence-level and pragmatic processors contribute to L2 reflexive pronoun interpretation. As for the proficient-level learners (Levels 1 & 2), who dominantly used the sentence-level processor to interpret reflexives in single isolated sentences, Figure 1 below can illustrate how the two processors might have influenced their reflexives interpretation depending on the conditions. When they interpret reflexives in an isolated sentence without prior context, the strength of the sentence-level processor overwhelms that of the pragmatic processor (as represented by the size of the processor and the font on the left side of Figure 1), resulting in mostly the correct interpretation. In addition, the difference in performance between Level 1 and Level 2 participants can be accounted for if we assume that the Level 2 participants' pragmatic processor is slightly more dominant than Level 1 participants' pragmatic processor. However, when they interpret reflexives in the presence of a prior context that presents an opportunity to make use of the pragmatic processor, its strength increases although it may not outgrow that of the sentence-level processor, whose strength may stay the same (right side of Figure 1), leading to a subsequent increase in the frequency of incorrect reflexive interpretation. Again, the difference in performance between Level 1 and Level 2 participants can be accounted for if we assume that the Level 2 participants' pragmatic processor becomes slightly more dominant than Level 1 participants' pragmatic processor.

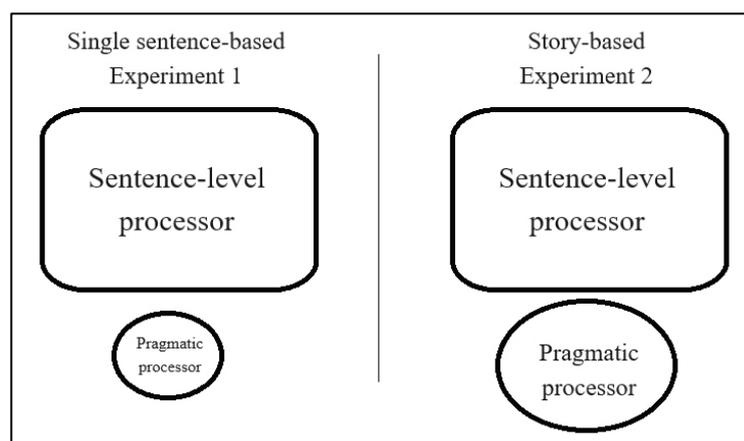


FIGURE 1

Two Processors in Competition in Each Condition (Adapted from O'Grady, 2013, p.56)

In order to account for the increased strength of the pragmatic processor in the story condition, which allowed English reflexives to be construed with discourse antecedents, the influence of L1 Korean, in which reflexives freely pick up discourse antecedents, can be considered. However, L1 influence may not be the only contributor. Another factor involved may be L2 learners' tendency to rely on 'shallow' processing: L2 learners are suggested to be fundamentally different from native speakers in that the former mostly rely on shallow, nonsyntactic processing that is guided by semantic and discourse factors, while the latter can utilize both deep and shallow processing (e.g., Clashen & Felser, 2006). Previous research has shown that proficient L2 learners of English whose L1s are Japanese (Felser et al., 2009) and German (Felser & Cunnings, 2012) both tend to rely on discourse salience when interpreting English reflexives rather than applying the structural binding principle. It can be argued that L1 Japanese learners carried over their L1 strategy to English since Japanese has long-distance reflexives, but L1 German learners also used the same strategy even though German does not allow long-distance reflexives, just like English does not. Thus, based on the processing pattern of L1 German learners, L1 influence cannot be considered as the lone factor accounting for processing L2 English reflexives: the shallow processing strategy may be an extra factor.

If we assume, then, that L1 influence and shallow processing are both contributing to strengthening the pragmatic processor, it can be suggested that Level 1 participants in this study were consistently able to use the sentence-level processor despite L1 influence and shallow processing in the isolated sentence condition. However, the context in the story condition provided them increased opportunity for L1 influence and shallow processing, leading them to occasionally allow the pragmatic processor to take the place of the sentence-level processor. This tendency was also observed in the results of Level 2 participants as they were able to employ the sentence-level processor quite well in the first experiment but their accuracy dropped in the second experiment. However, Level 3 participants, who were incapable of consistently using the sentence-level processor in the first task, seemingly demonstrated no change in their reflexive interpretation strategy in the second task.

The Acquisition of L2 English Reflexive Pronouns

It was reviewed earlier that the emergentist view of the L2 acquisition process likely starts with the competition between the dominant processor of the L1 and the target processor of the L2; in this study, the competition arises between the pragmatic processor involved in Korean reflexive interpretation and the sentence-level processor employed for English reflexive interpretation. Then, the general picture of L2 English reflexive acquisition emerging from the results in this study can be described in terms of the following three steps. It should be noted once again that the three levels of proficiency based on off-line experiment 1 data in this study may not necessarily correspond to the overall English proficiency, although the following discussion is based on the assumption that experiment 1 result reflects overall English proficiency.

First, when the L2 learner's English proficiency level is low, the competition between the two processors is fierce. Thus, the two processing strategies are more or less in equilibrium. This can account for the unimpressive performance of Level 3 participants in both experiments.

Second, when the L2 learner reaches a highly proficient level of English, the sentence-level processor becomes strong enough to suppress the pragmatic processor when an English reflexive pronoun is encountered in the isolated sentence condition. However, when given the opportunity to interpret a reflexive within a larger context, the pragmatic processor may be activated, often coreferencing it with the illicit long-distance antecedent favored by the context as Level 1 and 2 participants did.

Thirdly, when the L2 learner reaches the native-like level, the pragmatic processor is suppressed so that it is not activated even in the presence of a larger context. Among the 30 Level 1 participants in this study, 10 participants who scored perfect on both conditions seem to belong to this near-native category.

If this analysis is on the right track, the course of L2 English reflexive pronoun development can be considered a processing improvement. Korean EFL learners would be subject to two forces at the beginning of L2 reflexive acquisition – pressure from working memory encouraging the use of sentence-level interpretive procedures that focus on immediacy versus sensitivity to prominence more compatible with the context-sensitive pragmatic processing (O'Grady, 2013). As their English proficiency increases, the sentence-level processor becomes more dominant even though the pragmatic processor may be activated under certain conditions. Subsequently, the sentence-level processor is reinforced to the point where its competitor is no longer activated even in the face of conditions that previously activated the pragmatic processor, thus, reaching native-like proficiency level.

CONCLUSION

This research examined how Korean learners of English would interpret English reflexives differently in two different conditions and the processing mechanisms that underlie the two types of interpretations. The key framework for this research was the emergentist approach which contends that the difference in reflexive pronoun systems of Korean and English, traditionally treated as typical examples of parametric variation, stems from the two modes of processing, each utilizing the sentence-level processor and the pragmatic processor. Additionally, in consequence, the L2 English reflexives development process was described in terms of the two processors starting out as competitors but ultimately L2 learners settling on one of them – in the current case, the gradual strengthening of the sentence-level processor at the expense of the weakening pragmatic processor. Further research in this area such as examining various other L1 – L2 pairs and probing L2 learners online processing using methods like eye-tracking would enhance our understanding on how language is processed and developed.

Despite the theoretical significance of differing reflexive pronoun interpretation across languages, L2 reflexive pronoun

interpretation is generally not given much attention by teachers or learners. For a Korean learner of English, correctly interpreting a reflexive pronoun in the object position of a simple sentence such as *John hit himself* would not be difficult. However, the Korean learner needs to understand that the English reflexive pronouns in more complex sentences, such as those dealt with in this study, behave differently than the reflexives in their native language. Thus, the result of this study can also provide classroom practice implications for English educators in Korea regarding the importance of pragmatic influence in L2 acquisition (Cho, 2004). It suggests that they should be aware of the challenges Korean learners at various proficiency levels face in acquiring English reflexive pronouns such as Korean learners' tendency to rely on the L1 reflexive pronoun interpretation strategy, that is, prioritizing the pragmatic processor over the sentence-level processor. Therefore, instructions designed to address such challenges should be considered, which may involve explicit instruction on how English reflexive pronouns work and how they differ from Korean ones, activities focusing on sentence-level processing that would allow students to prioritize sentence structure when a clear antecedent is present within the sentence, and applying different instructional approaches to learners at different proficiency levels.

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Appendix A

Experiment 1 items (Items 2, 5, 8, 11, 14, 17, 20 are test items.)

1. The waiter at a restaurant spilled water on Ms. Johnson.
Did Ms. Johnson go to a restaurant?
2. David said that Joe protected himself.
Did Joe protect David?
3. It took all day for Lucy to finish cleaning Olivia's house.
Did Lucy clean Olivia's house?
4. Ben told Carlos to come to his party.
Is Ben planning to hold a party?
5. Ms. Miller found out that her daughter painted herself.
Did Ms. Miller's daughter paint Ms. Miller?
6. Ryan gave his parents a book that Karl wrote.
Did Karl write a book?
7. Sophia wanted her father to get chocolates for her birthday.
Did Sophia's father buy a birthday present for Sophia?
8. Jason said that his dad shaved himself.
Did Jason's dad shave Jason?
9. Ms. Lee wanted Kate to take care of her cat.
Did Ms. Lee have a cat?
10. Mark apologized to his friends for breaking the classroom window.
Did Mark break a window?
11. Sarah said that Jane dried herself.
Did Jane dry Sarah?
12. Jack thanked the gym manager for bringing his bag to him.
Did Jack bring his bag home?
13. The nurse said that Barbara would be able to go home soon.
Is Barbara in the hospital?
14. John found out that Michael shot himself.
Did Michael shoot John?
15. Susan asked her roommate Emily to always lock the door when leaving the house.
Did Emily leave the door open when leaving the house?
16. William advised Julia to finish the work as soon as possible.
Did William give an advice to Julia?
17. Mary thanked Lily for introducing herself.
Did Lily introduce Mary?
18. Natalie's father told Natalie to wash her car.
Does Natalie have a car?
19. Elizabeth asked her coworker Matthew to have lunch together.
Do Elizabeth and Matthew work for the same company?
20. The little boy said that Steve hurt himself.
Did Steve hurt the little boy?

Appendix B

Experiment 2 items (Items 2, 5, 8, 11, 14, 17, 20 are test items.)

1. Elizabeth works at an international trading company.
She has been working on a project with Matthew for a few weeks now.
But they just worked in the office and never had a chance to eat together yet.
So Elizabeth suggested to Matthew that they should eat lunch together tomorrow.
Matthew gladly agreed to do so.
Elizabeth asked her coworker Matthew to have lunch together.
2. David and Joe are best friends.
David is the smallest boy and Joe is the strongest boy in their high school.
Recently, some boys are bullying David at school.
When Joe found out about it, he protected David, and the bullying never happened again.
David told his parents about it, and David's parents thanked Joe.
David said that Joe protected himself.
3. Ms. Lee lives alone with her cat.
One day, Ms. Lee decided to travel abroad for 2 weeks.
So Ms. Lee asked her neighbor Kate to take care of the cat while she is away.
Kate agreed and Ms. Lee took her cat to Kate's house before she left.
Kate will feed the cat for the next 2 weeks.
Ms. Lee wanted Kate to take care of her cat.
4. Ms. Johnson went to her favorite restaurant for dinner.
She ordered a cup of water and her favorite noodle.
Soon, a waiter brought her a cup of water but she spilled some water on Ms. Johnson's skirt.
The waiter panicked and apologized to Ms. Johnson.
Ms. Johnson said it was okay and calmed the waiter down.
The waiter at a restaurant spilled water on Ms. Johnson.
5. Ms. Miller has a daughter who goes to kindergarten.
One afternoon, Ms. Miller went to pick up her daughter from kindergarten.
At the kindergarten, Ms. Miller found out that all the children painted pictures that day.
When her daughter came out, Ms. Miller could see the picture that her daughter painted.
In the picture, Ms. Miller was wearing a dress.
Ms. Miller found out that her daughter painted herself.
6. Last night, Jack found out that his bag was missing.
He thought that he left his bag at the gym.
So Jack called the gym manager to check if his bag was at the gym.
The manager found Jack's bag and brought it to Jack's house.
Jack was very thankful and had dinner with him.
Jack thanked the gym manager for bringing his bag to him.
7. Ben is planning to hold a party next week at his house.
Ben called his friend Emma to invite her to the party.
Emma happily accepted Ben's invitation to the party.
Ben said that Emma could invite her friends, too.
So she called her friend Carlos to invite him to Ben's party.
Ben told Carlos to come to his party.

8. Last night, Jason hurt his hand while playing basketball.
So Jason could not shave his face this morning.
Jason's dad shaved Jason's face after finding out that Jason hurt his hand.
After the shave, Jason thanked his dad.
Then, Jason explained how he was able to get his face shaved to his mom.
Jason said that his dad shaved himself.
9. Ryan and Karl have been best friends since they were young.
Recently, Karl published a book he was writing for a few years.
Ryan was so happy and proud of his friend.
So Ryan bought 10 copies of Karl's book.
Then Ryan gave the book to his parents and coworkers at his job.
Ryan gave his parents a book that Karl wrote.
10. Yesterday, Mark was playing soccer with his friends at school.
While playing soccer, he kicked the ball and accidentally broke his classroom window.
The teacher called Mark's mom and told her what happened.
Mark's mom apologized to the teacher.
Mark promised his mom and his teacher that he would be careful next time.
Mark apologized to his friends for breaking the classroom window.
11. Sarah was coming home when it suddenly started to rain.
Sarah got soaked and slipped hurting her hand.
When Sarah returned home, her roommate Jane found out that Sarah was wet and hurt.
So Jane dried Sarah with a towel.
That night, while talking on the phone, Sarah told her mom about Jane's help.
Sarah said that Jane dried herself.
12. Sophia is a 6-year-old girl.
She likes to eat chocolates, but her mom doesn't buy chocolates because it's not good for Sophia.
One day, Sophia's dad asked her what she wanted for her birthday.
Sophia told her dad that she wants chocolates.
So Sophia's dad bought her chocolates as her birthday present.
Sophia wanted her father to get chocolates for her birthday.
13. Last night, Olivia held a party at her house.
Many people were invited to the party and they had a great time.
After the party, Olivia was too tired to clean up the house.
So this morning, Olivia called a cleaning company.
The cleaning company sent Lucy and she cleaned Olivia's house in 3 hours.
It took all day for Lucy to finish cleaning Olivia's house.
14. John and Michael started a water gun fight.
Michael was hiding behind a tree when he saw John near another tree.
Quietly, Michael shot John and wet John's shirt and pants.
John knew he was shot by Michael.
John wanted to make Michael wet too but could not find where Michael was hiding.
John found out that Michael shot himself.
15. Yesterday, Barbara was involved in a small car accident.
She was hurt a little bit and had to be hospitalized.
This morning, when the nurse came in, Barbara's dad was holding her hand.
The nurse told Barbara's dad that Barbara would be able to go home tomorrow.
Barbara's dad was relieved to hear that.

The nurse said that Barbara would be able to go home soon.

16. Julia is a software engineer and loves her job.
She is always working hard and eager to take on new projects.
But recently Julia is feeling tired.
Her boss William is concerned about her health and tells her to take a break.
Julia doesn't want to, but agreed to take 2 weeks off from work.
William advised Julia to finish the work as soon as possible.
17. Last night, Mary went to a party with her friend Lily.
At the party, there were many people that Mary didn't know.
Because Mary was shy, she couldn't talk to them.
So Lily introduced Mary to the people at the party.
Mary thanked Lily and had a great time at the party.
Mary thanked Lily for introducing herself.
18. Natalie drives to her workplace every day.
One day, Natalie's father found out that her car was too dirty.
So he said to Natalie that she should wash her car.
But Natalie didn't want to because she was tired.
Besides, she knew that it was going to rain the next day.
Natalie's father told Natalie to wash her car.
19. Susan is a university student living with her roommate Emily.
Recently, Susan heard a disturbing news about thefts in the neighborhood.
There were already 4 houses that had valuable things stolen.
Susan became worried and told Emily the news.
They decided that they should make sure the door is always locked.
Susan asked her roommate Emily to always lock the door when leaving the house.
20. After school, Steve was passing by a playground on his way home.
Suddenly, a ball came rolling toward Steve.
At the playground, a little boy was asking Steve for the ball.
Steve threw the ball and hurt the little boy as it hit the little boy's head.
The little boy went screaming to his mother and told her what happened.
The little boy said that Steve hurt himself.