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The Effect of L2 Age of Acquisition on L3 Regressive Transfer: Testing the Differential Stability Hypothesis

제 2 언어 습득 연령이 제 3 언어의 역전이현상에 끼치는 영향: 차별적 안정성 가설의 검증

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외국어교육과 영어전공

김 준 희

The Effect of L2 Age of Acquisition on L3 Regressive Transfer: Testing the Differential Stability Hypothesis

by

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ABSTRACT

The Effect of L2 Age of Acquisition on L3 Regressive Transfer: Testing the Differential Stability Hypothesis

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The present thesis examined the effect of L2 age of acquisition (AoA) on L3 regressive transfer focusing on the Korean-English L2 group and Korean-English-Spanish L3 group in their interpretation of English bare and definite plural noun phrases (NPs), aiming to test the validity of the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b). According to the DSH, there exists a fundamental difference in terms of L1 versus L2 stability, so that the later acquired L2 systems are more susceptible to influence from L3 when compared with that on L1. Cabrelli Amaro (2017b) has posited AoA threshold of 12 and expected only the language system acquired after the age 12 to be affected by L3 influence, but not the language system acquired before the age. Therefore, according to the DSH, the L3 participants of the present study with advanced L2 proficiency and L2 AoA under 12 were expected not to exhibit L3 regressive transfer effects.

Bare and definite plural NPs in Korean, English, and Spanish provide an ideal case for examining the interpretation differences and thus testing the DSH. As for bare plurals, Korean allows both generic and specific interpretation, English allows only generic interpretation, and Spanish bare plurals are ungrammatical in the preverbal position. As for definite plurals, Korean lacks a definite article and definite plurals, English allows only specific interpretation, and Spanish allows both generic and specific interpretation. The diverging interpretation of bare and definite plurals in the three

languages and none of the languages being of cognate status allowed for the removal of confounding variables in testing the DSH (i.e., cumulative influence and cognate languages) noted by Cabrelli Amaro and therefore provided with a clearer picture in testing the DSH. It was predicted that if L3 regressive transfer occurs, the Korean-English-Spanish L3 group would be affected in their interpretation of L2 English bare and definite plurals, exhibiting optionality in their interpretation.

The study recruited 24 Korean-English L2 learners and 22 Korean-English-Spanish L3 learners as the participants, who were of advanced L2 proficiency (C1 and C2 level in the Common European Framework of Reference for Languages (CEFR)) and of L2 AoA under 12. However, during the screening process to determine target-like judgments of Spanish bare and definite plurals, the present study was left with only 7 L3 participants who could be statistically analyzed for the existence of L3 regressive transfer effects. The two groups were comparable in terms of L2 age of acquisition, proficiency, amount of L2 experience, and article accuracy. The L2 participants took part in an English truth-value judgment task (TVJT) on interpretation of English bare and definite plurals, acceptability judgment task (AJT) on absolute judgments of English bare and definite plurals in generic versus specific contexts, additional AJT on overall knowledge of articles, L2 proficiency test, and finally, a language background survey. The L3 participants took part in both English and Spanish versions of the tasks, for the purpose of additionally confirming whether the L3 participants are comparable in their judgments of Spanish bare and definite plurals with Spanish native speakers.

Contrary to the expectations of the DSH, the experimental results revealed the existence of L3 regressive transfer effects for the Korean-English-Spanish L3 group in their interpretation of English bare plurals. They were significantly less accurate in the

bare plurals condition of the TVJT when compared with the Korean-English L2 group. The results suggest that the DSH positing L2 AoA threshold of age 12 in predicting language stability cannot be fully supported.

Keywords: L3 regressive transfer, Differential Stability Hypothesis, Critical Period Hypothesis

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CHAPTER 1.

INTRODUCTION

The current study investigates the effect of L2 age of acquisition (AoA) on L3 regressive transfer and aims to test the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b). This chapter introduces the motivations and purposes of the present study, poses research questions and the corresponding hypothesis, and finally, outlines the organization of the thesis. Section 1.1 introduces the general background that motivates the present study, along with the tenets of the DSH it aims to test. Then, Section 1.2 posits the research questions of the study and the corresponding hypothesis, followed by Section 1.3 that details the outline of the present thesis.

1.1 Motivation of the Study

Despite burgeoning interest in the field of third language (L3) acquisition and a host of research conducted in the field concerning progressive transfer, not much research has been conducted regarding regressive transfer, where there exists cross-linguistic influence in the direction of L3 to second language (L2) and/or first language (L1). According to Ahn and Mao (2019), research on the phenomenon of L3 regressive transfer in the morphosyntactic domain has been

scarcer; most of the research concerning L3 regressive transfer was conducted in the morphological or phonological domain. Therefore, this research aims to add on to the rather unexplored realm of L3 regressive transfer in the morphosyntactic domain. In doing so, it particularly focuses on the effect of L2 AoA on L3 regressive transfer, aiming to test the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b).

This identification the effect of L2 AoA on L3 regressive transfer gains significance because it has the potential to give answers to the long-held debate over systematic differences in L1 and L2. According to Cabrelli Amaro's (2017b) Differential Stability Hypothesis (DSH), language stability in the morphosyntactic domain is subject to critical period (operationalized as age of 12 following Lenneberg, 1967) so that language acquired after the age is more vulnerable to influence from the additionally acquired language. That is, according to the DSH, there exists a fundamental difference in terms of stability between L1 and L2 so that even apparently native-like L2 is more affected by L3 influence when compared with L1.

The DSH was first proposed in Cabrelli Amaro, Amaro, and Rothman (2015) where the English-Spanish-Brazilian Portuguese (BP) L3 group was affected in their knowledge of L2 Spanish subject-to-subject raising over an intervening dative experiencer in an infinitival clause (henceforth, TPExp)[1] from

[1] The phenomenon is termed TPExp in the present thesis following previous studies. It is termed TPExp because while in some languages (e.g., English), raising constructions as in the following example (1) allow subject *John* in the

L3 BP contrary to the Spanish-English L2 group that remained unaffected in their knowledge of TPExp in their L1 from L2 English. Cabrelli Amaro (2017b) further sought to directly test the hypothesis with the mirror image participant groups of Spanish-English-BP L3 and English-Spanish-BP L3 learners (both of which acquired L2 after the age of 12) concerning the phenomenon of TPExp. Although the English-Spanish-BP L3 group exhibited significantly more influence on L2 Spanish from L3 when compared with that on L1 Spanish of the Spanish-English-BP L3 group, BP did have influence on L1 Spanish, which is unexpected considering Cabrelli Amaro et al.'s (2015) results.

Cabrelli Amaro (2017b) supposes that English and BP with the same feature configuration in terms of TPExp and thus having cumulative influence on L1 Spanish, and/or the fact that BP and Spanish are cognate languages may have brought about the unexpected result. In the face of such conflicting evidence, this research seeks to identify the effect of L2 AoA on L3 regressive transfer and further test the DSH with the participants of a Korean-English L2 group and Korean-English-Spanish L3 group whose L2 English AoA is categorically under 12.

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infinitival clause (TP) to raise across *to Mary* (Exp(eriencer)), while in other languages (e.g., Spanish), as in example (2), does not.

(1) John$_i$ seems to Mary [t_i to have left]

(2) *Juan me parece amar a María
Juan to-me seems to love María
(Ausín & Depiante, 2000, pp. 155-156)

Bare and definite plural NPs in Korean, English, and Spanish provide an ideal test case for testing the DSH, as the languages exhibit diverging characteristics in their interpretation. In the case of Korean, it lacks articles, and therefore the distinction between bare and definite plurals does not arise. As can be seen from example (3), Korean bare plurals can have both generic and specific interpretation, so that they can convey a general statement about lions as well as a specific statement about a particular set of lions (Kim, 2005). According to Ionin and Montrul (2010), although example (3) is more naturally understood as having generic interpretation according to their Korean-speaking informants, both generic and specific readings are allowed for Korean plural marker *tul* used with bare NPs.[2]

(3) Saca-tul-un wihemha-ta
lion-PL-TOP dangerous-DECL
"Lions are dangerous / ?The lions are dangerous."
[√generic, √/?specific]
(Ionin & Montrul, 2010, p. 881)

On the other hand, English and Spanish, as the languages with articles, vary in their use of bare and definite plurals with generic and specific readings. In

[2] Abbreviations in the glosses: DECL = Declarative marker; PL = Plural marker; T= Tense node; TOP = Topic marker.

the case of English bare and definite plurals illustrated in example (4), only genericity is conveyed through the use of bare plurals. Therefore, example (4a) conveys only a general statement about lions, and a specific statement about a particular set of lions (that some salient lions are dangerous) can only be conveyed through the use of definite plurals as in example (4b).

(4) a. Lions are dangerous. [√generic reference, ∗specific reference]

b. The lions are dangerous. [∗generic reference, √specific reference]

(Ionin & Montrul, 2010, p. 880)

Spanish, unlike English exemplified in example (4), disallow preverbal bare plurals as in example (5a) due to syntactic restrictions on null determiners. Spanish definite plurals, in turn, allow both generic and specific interpretation, leading the sentence (5b) to convey both a general statement about lions as well as a statement pertaining to a particular set of lions.

(5) a. * *Leones* *son* *peligrosos.*
Lions are dangerous

b. *Los* *leones* *son* *peligrosos.*
The-PL lions are dangerous

‘The lions are dangerous.’ [√specific reference,

√generic reference]

(Ionin & Montrul, 2010, p. 880)

All in all, Korean, English, and Spanish have diverging interpretation of bare and definite plurals: 1) Korean bare plurals can bear both and specific readings, English bare plurals allow only generic readings, and Spanish bare plurals are ungrammatical in the preverbal position; and 2) Korean lacks definite plurals stemming from the lack of a definite article, English definite plurals allow only specific readings, and Spanish definite plurals allow both generic and specific readings. The diverging features with regards to Korean, English, and Spanish bare and definite plurals barring cumulative influence and none of the languages being of cognate status allow for a clearer picture regarding the stability of the language system by removing in advance the confounding variables noted in Cabrelli Amaro (2017b).

To summarize, the current study probes the effect of L2 AoA on L3 regressive transfer and further tests the DSH. In doing so, the Korean-English L2 group and Korean-English-Spanish L3 group are examined on their interpretation of English bare and definite plurals to remove the confounding variables (i.e., cumulative influence and cognate languages) in testing the DSH. The two groups tested have been closely matched in terms of their L2 profiles (i.e., L2 AoA, proficiency, amount of L2 experience, and article accuracy). The only

distinguishing factor between the two groups, therefore, is the presence or absence of L3 acquisition.

1.2 Research Questions and Hypothesis

The central question of the present study is to identify the effect of L2 AoA on L3 regressive transfer and further test the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b). For the purpose of addressing the issue, the present study first examines whether there exist L3 regressive transfer effects for the Korean-English-Spanish L3 participants of the study (of advanced L2 proficiency and L2 AoA under 12) in their interpretation of English bare and definite plurals. Then, the present study tests the validity of the DSH in light of the answer to the first research question. Hence, the following two research questions guided the present study:

1. Are Korean-English-Spanish L3 learners (with advanced L2 proficiency and L2 AoA under 12) subject to L3 regressive transfer?
2. How does the result support the Differential Stability Hypothesis?

Considering the fact that the Korean-English-Spanish L3 learners of the present study of advanced English proficiency have all acquired their second language before the age of 12, the DSH would predict their interpretation of English bare and definite plurals to remain unaffected; therefore, if the Korean-English-Spanish L3 group exhibit L3 regressive transfer when compared with the

Korean-English L2 group of comparable L2 language profiles (i.e., L2 AoA, proficiency, amount of L2 experience, and article accuracy), the DSH cannot be fully supported.

1.3 Organization of the Thesis

The thesis consists of five chapters: Chapter 1 introduces the motivations and purposes underlying the present study, and then presents two research questions and the corresponding hypothesis. Chapter 2 reviews previous literature on studies arguing for the effect of L2 AoA on L3 regressive transfer, previous studies on L3 regressive transfer highlighting the roles of L2 experience and L2 and L3 proficiency, and linguistic analysis of bare and definite plural NPs in Korean, English, and Spanish. Chapter 3 describes the research methodology adopted in this study, ranging from participants, test items, test procedure, and data analysis. Chapter 4 reports the key findings from the study along with the statistical analyses of the experiments and further discusses key findings of the present study, focusing on their implications and central issues related to the two research questions. Chapter 5 summarizes and concludes the study by addressing its major findings, implications, limitations, and suggestions for further research.

CHAPTER 2.

LITERATURE REVIEW

This chapter probes the theoretical and conceptual underpinnings that motivate the present study. Section 2.1 introduces the studies arguing for the effect of L2 AoA on L3 regressive transfer, focusing on the DSH and the Phonological Permeability Hypothesis (PPH, Cabrelli Amaro & Rothman, 2010) from which the DSH has originated. Subsequently, Section 2.2 overviews previous studies on L3 regressive transfer highlighting the roles of L2 experience and L2 and L3 proficiency, with direct or indirect implications on the PPH and DSH. Section 2.3 provides a thorough linguistic analysis on bare and definite plural noun phrases (NPs) in each respective languages of Korean, English, and Spanish, which are the linguistic items and languages of primary interest in the present study. Finally, Section 2.4 restates the research gaps identified from the thorough review of previous literature and again states the two research questions that guide the present study.

2.1 The Effect of L2 AoA on L3 Regressive Transfer

The present section scrutinizes studies arguing for the effect of L2 AoA on L3 regressive transfer, focusing on the two hypotheses of the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b) and the Phonological

Permeability Hypothesis (PPH, Cabrelli Amaro & Rothman, 2010) from which the DSH has originated. To offer a chronological overview, the section commences with a review of the PPH and subsequently proceeds to examine the DSH.

2.1.1 The Phonological Permeability Hypothesis (PPH)

There has been this distinct line of research on L3 regressive transfer initiated from the work of Cabrelli Amaro and Rothman (2010) which scrutinized the differential effects of L3 acquisition on the L2 system when compared with L1. While initial investigations of the differential effects of L3 on L1 versus L2 were focused on the phonological domain based on Cabrelli Amaro and Rothman, research later extended into the morphosyntactic domain (Cabrelli Amaro, 2017b; Cabrelli Amaro et al., 2015; Puig-Mayenco, 2022). Therefore, the following presents a chronological review of research conducted in both the phonological and morphosyntatic domains that sought to differentiate effects of L3 on L2 when compared with L3 on L1 in terms of each language's susceptibility to L3 influence.

Cabrelli Amaro and Rothman (2010) note that the virtually unexplored area of L3 regressive transfer has its value in that it has the potential to inform the mental constitution of L1 and L2 systems. That is, L3 regressive transfer has its value in that it may give answers to the long-held debate over systematic differences in L1 and L2, and the Critical Period Hypothesis—there exists a time

frame so that the language acquired after the time frame is distinct from the language acquired within the frame—which has been at the center of the debate (Lenneberg, 1967). Their logic underlying such prediction was that: when native and seemingly native-like nonnative phonological system are constructed and/or learned identically in terms of their systematicity, additional acquisition of a third language is expected to affect the two systems in an equal manner; if not, so that L2 AoA significantly affects the degree or speed of interference from L3 to L2, some level of fundamental difference between the two systems are to be posited, even if they may appear indistinguishable on the surface.

As a result, Cabrelli Amaro and Rothman (2010) proposed the Phonological Permeability Hypothesis (PPH), according to which pre- and post-pubescent acquisition results in fundamental difference in terms of cross-linguistic permeability (i.e., vulnerability to be influenced by the other languages) in the phonological domain. Furthermore, the PPH postulates that this fundamental difference between the two systems is maturationally constrained. One caveat to be noted, however, is that this fundamental difference does not concern language universals but that the nature of difference concerns the sole factor of language stability. Therefore, in line with the Full Transfer/Full Access model of Schwartz and Sprouse (1996, 2021), the L2 initial state consists of the copy of the learner's previously acquired language along with access to universals, and the L3 initial state consists of the copy of one of the learner's previously acquired language with full access to universals, but L1 and L2 systems do differ in their permeability

from L3. That is, despite the possibility of native-like representation of phonological system with no critical period for its acquisition, the fundamental difference of the PPH concerns stability, in which even apparently native-like L2 phonological system is more vulnerable to influence from L3 when compared with L1.

The PPH was supported through a small pilot study conducted in Cabrelli Amaro and Rothman (2010). In this study, an English-Spanish-Brazilian Portuguese (BP) L3 group that began learning L2 Spanish after the age 12, along with simultaneous Spanish/English bilinguals learning BP as their third language were investigated in regard to phonological phenomena in which Spanish and BP diverge (i.e., spirantization, coda deletion, phonemic nasality, vowel neutralization, resyllabification of illegal codas). Their pilot case study examined the two groups through monthly data collection of a longitudinal study on the aforementioned phonological values, both in L2 Spanish and L3 BP, and incorporated the following tasks of "psycholinguistic perception tasks, word and sentence level target production tasks and elicited spontaneous production procedures" (Cabrelli Amaro & Rothman, 2010, p. 289). Results revealed a pattern that corroborated the predictions of the PPH: while both groups were faced with transfer of Spanish values in the L3 BP initial state given their typological proximity, only the successive bilingual group was shown to exhibit quick and pervasive L3 regressive transfer on their L2 phonological system. Furthermore, for the simultaneous bilingual group, L3 regressive transfer effects were not noted,

so that their L2 phonological system was shown to be impervious to L3 BP phonological values. This was the case even with clear demonstration that the relevant L3 BP phonological values had been successfully acquired for both groups.

Cabrelli Amaro's (2017a) subsequent experiment directly testing the PPH further lent support to their hypothesis. In this experiment, two groups of sequential bilinguals (i.e., English-Spanish-BP L3 group and Spanish-English-BP L3 group with L2 AoA over the age 12), as well as Spanish native speakers, went through measures of an auditory forced-choice goodness task examining learners' knowledge of vowel reduction in Spanish and a delayed repetition task examining their Spanish production of vowel height/frontness together with relative duration of /o/. Neither accuracy nor response time measure for the perception data revealed significant difference from L3 BP influence for both experimental groups when compared with Spanish native speakers, exhibiting no evidence of vulnerability from L3 influence for either group. However, the delayed repetition task uncovered significant difference in Spanish vowel height from L3 BP influence in the English-Spanish sequential bilingual group when compared with the Spanish-English sequential bilingual group and Spanish native speakers. Given that only the English-Spanish sequential bilingual group exhibited L3 BP influence in terms of their Spanish vowel production, Cabrelli Amaro's study offers support for the understanding that late-acquired phonological systems are less impervious to influence from novel systems when compared with early-acquired phonological

systems, in line with the PPH. At the same time, the noted asymmetry between perception and production in terms of its stability was hypothesized to have resulted from cognitive control mechanisms (e.g., failure to inhibit non-target speech forms in production).

2.1.2 The Differential Stability Hypothesis (DSH)

Cabrelli Amaro (2017b) recently extended the Phonological Permeability Hypothesis (PPH, Cabrelli Amaro & Rothman, 2010) into the morphosyntactic domain in the name of the Differential Stability Hypothesis (DSH). Just as late-acquired phonological systems were postulated to be significantly different in terms of stability when compared with the early-acquired phonological systems in the PPH, the DSH predicts such stability differences between late-acquired and early-acquired language systems to exist also in the morphosyntactic domain. That is, there exists a maturationally conditioned fundamental difference in terms of stability (i.e., vulnerability to L3 influence) in the morphosyntactic language system acquired before and after the critical period (again operationalized as AoA of 12 years old threshold following Lenneberg, 1967) according to the DSH.

The DSH was first proposed with the experimental results of Cabrelli Amaro et al. (2015) examining the phenomenon of subject-to-subject raising over an intervening dative experiencer in an infinitival clause (TPExp). While English and BP both permit TPExp as shown from the examples (6-7), Spanish does not

permit it as can be seen from example (8). Ausín and Depiante (2000) note this to have originated from different feature specifications of embedded non-finite T, so that embedded non-finite T is defective or [-finite] in English and BP to allow TPExp, whereas embedded non-finite T that is non-defective or [+finite] in Spanish disallows TPExp with the subject obligatorily assigned Case feature in the embedded subject position. That is, with English and BP having [-finite] embedded T, TPExp is allowed for it to be assigned with nominative case in the matrix *seems* clause; on the other hand, Spanish having [+finite] embedded T blocks this overt movement, with case assigned at the embedded T position.

(6) Peter$_i$ seems to me [T[$_{def}$] t_i to love Mary]
me.exp

(7) Pedro$_i$ me parece [T[$_{def}$] t_i amar (a) Maria]
Pedro me.exp seems to.love (the) Maria
'Pedro seems to me to love Maria.'

(8) *Pedro$_i$ me parece [T[$_{non\text{-}def}$] t_i amar a María]
Pedro me.exp seems to.love to Maria
'Pedro seems to me to love Maria.'

(Cabrelli Amaro et al., 2015, p. 10)

With the noted differences in terms of featural configurations of embedded T in Spanish when compared with English and BP, and the resulting

differences in grammaticality of TPExp in the languages, Cabrelli Amaro et al. (2015) noted on how the Spanish-English L2 group with near-native L2 proficiency remained unaffected in their knowledge of Spanish TPExp while the English-Spanish-BP L3 group (with L2 AoA over the age of 12 and of advanced L2/L3 proficiency) was indeed affected in their Spanish TPExp knowledge, exhibiting instability resulting from L3 regressive transfer. That is, their English-Spanish-BP L3 group shown to have overcome nonfacilitative transfer from Spanish to BP in terms of TPExp in its initial state of L3 acquisition then exhibited nonfacilitative regressive transfer from BP to Spanish with proficiency gains in L3, so that ungrammatical TPExp in Spanish was significantly more accepted for the L3 group when compared with Spanish controls with no exposure to BP. This is in stark contrast to Cabrelli Amaro et al.'s (2015) Spanish-English L2 group with near-native L2 proficiency who were shown to reject TPExp categorically in Spanish, despite their near-native proficiency in English in which TPExp is grammatical (just like in BP) and their minimum five years of immersion experience in the United States.

Therefore, Cabrelli Amaro (2017b) sought to directly test the DSH with a English-Spanish-BP L3 group and Spanish-English-BP L3 group (both groups' L2 AoA is over the age of 12) by examining the participants' knowledge of Spanish TPExp in the face of increasing L3 BP proficiency and resulting knowledge of grammatical TPExp in BP. Cabrelli Amaro expected only the English-Spanish-BP L3 group to be affected in their knowledge of TPExp based on the predictions of

the DSH coupled with the experimental results of Cabrelli Amaro et al. (2015): the DSH postulates a fundamental difference in terms of stability when late-acquired linguistic systems and early-acquired linguistic systems are compared, so that L2 (acquired after the age of 12 following Lenneberg, 1967) is more vulnerable to influence from L3 when compared with L1 acquired before the age 12 threshold; Carbelli Amaro et al.'s (2015) participants of Spanish-English L2 group were significantly different from the English-Spanish-BP L3 group (with L2 AoA over the age of 12 and of advanced L2/L3 proficiency) in that they did not exhibit any regressive transfer effects in terms of L1 Spanish TPExp knowledge despite their near-native L2 proficiency and considerable amount of immersion experience in the United States.

Although Cabrelli Amaro's (2017b) participants of Spanish-English-BP L3 group exhibited more stability in terms of Spanish TPExp knowledge when compared with the English-Spanish-BP L3 group in the face of L3 BP acquisition and resulting knowledge of BP TPExp, there did exist L3 regressive transfer effects for the Spanish-English-BP L3 group in their knowledge of Spanish TPExp. That is, despite the lesser extent to which L3 BP acquisition affected L1 Spanish knowledge of TPExp when compared with L2 Spanish, with the English-Spanish-BP L3 group accepting ungrammatical TPExp in Spanish significantly more when compared with the Spanish-English-BP L3 group, there *did* exist effect of L3 BP on L1 Spanish. This is an unexpected result considering the experimental results

of Cabrelli Amaro et al. (2015), based on which Spanish-English-BP L3 group was predicted to be unaffected in their knowledge of Spanish TPExp.

Cabrelli Amaro (2017b) thus proposes the following two factors that may have brought about the unexpected L3 regressive transfer effect from L3 BP to L1 Spanish. First, English and BP have the same featural configuration of embedded non-finite T and they both allow TPExp. The fact that the two languages share such featural configuration of T and resulting grammaticality of TPExp may have brought about cumulative influence on L1 Spanish. This cumulative influence of two or more languages with the same grammatical properties affecting L3 regressive transfer had also been noted in Cheung (2011), where L3 acquisition and resulting L3 regressive transfer effects on L2 were shown to override L1 influence when L2 and L3 shared certain grammatical properties: Cantonese-English-German L3 group in Cheung's study exhibited less production of non-target present simple known to be a typical error resulting from L1 Cantonese transfer when compared with the Cantonese-English L2 group. Therefore, Cabrelli Amaro postulates that the cumulative influence from English and BP (with their shared featural configuration of T and resulting grammaticality of TPExp) may have led the Spanish-English-BP L3 group to over-accept ungrammatical Spanish TPExp, thus exhibiting L3 regressive transfer effects on L1 Spanish contrary to the Spanish-English L2 group in Cabrelli Amaro et al. (2015).

The recent experimental study of Puig-Mayenco (2022) seconds this factor of cumulative influence of two or more languages in the course of L3

acquisition as having its effects on L3 regressive transfer. Puig-Mayenco examined the tenets of the DSH with the population of Catalan-Spanish bilinguals of a Catalan-Spanish L2 group, Spanish-Catalan L2 group, Catalan-Spanish-English L3 group, and Spanish-Catalan-English L3 group. They specifically examined how the Catalan-Spanish-English L3 group and Spanish-Catalan-English L3 group of highly advanced L3 proficiency processed Spanish and Catalan negative concord items differentially when compared with the L2 groups through means of a self-paced reading task. With all the participants having had early acquired L2 systems between AoA of 3 and 6, the Catalan-Spanish-English L3 group and Spanish-Catalan-English L3 group exhibited L3 regressive transfer effects for none of the negative concord items in their L1s. As for their L2s, however, processing of negative concord items for the L3 groups when compared with the L2 groups (with no L3) was affected only in the cases where L1 and L3 share identical configuration contrary to L2. Citing previous literature (e.g., Aysan, 2012; Cheung, 2011) that has also noted on cumulative influence in L3 acquisition processes where two or more languages behave similarly in certain linguistic properties to together influence the other system, Puig-Mayenco proposes *the Sandwich effect* in L3 acquisition. According to the *the Sandwich effect*, when L3 proficiency/use/activation/exposure is high so that certain linguistic property under investigation is target-like, the L1 and L3 sharing identical morphosyntactic representation enhances vulnerability of L2 and regressive transfer effects from L3 to L2. Therefore, although Cabrelli Amaro (2017) and Puig-Mayenco are not

directly comparable due to differences in the nature of the test measure (offline versus online) and the participants (adult L2 learners versus early bilinguals), they both postulate the cumulative influence of two or more languages as the potential underlying factor affecting L3 regressive transfer.

The second factor noted in Cabrelli Amaro (2017b) is the status of BP as the cognate language of Spanish. In fact, typological proximity factor has been constantly noted to play a crucial role not only in progressive transfer but also in regressive transfer in the domain of L3 acquisition studies (e.g., Brown, 2021; Giancaspro, Halloran, & Iverson, 2015; Westergaard, Mitrofanova, Mykhaylyk, & Rodina, 2017) stemming from Rothman's (2011, 2015) Typological Primacy Model where the L3 initial state is postulated to be conditioned by the sole syntactic transfer of a typologically similar language (L1 or L2). Therefore, Spanish and BP being cognates indeed may have served as the confounding variable in Cabrelli Amaro, resulting in the unexpected L3 regressive transfer effects from L3 BP to L1 Spanish. Hence, the confounding variables noted in Cabrelli Amaro (i.e., cumulative influence and cognate languages) have been removed in the present study examining the effect of L2 AoA on L3 regressive transfer and further testing the DSH so that the Korean-English-Spanish L3 group (and the Korean-English L2 group as the control group) with none of the three languages being of cognate status was tested on the linguistic item of English bare and definite plurals that all three languages diverge in their interpretation. Furthermore, given that Cabrelli Amaro (2017a, 2017b) has emphasized the

significance of L2 AoA in predicting L3 regressive transfer, the present study ensured that the L2 and L3 groups were closely matched in their L2 AoA.

2.2 Effects of L2 Experience and L2 and L3 Proficiency on L3 Regressive Transfer

The present chapter examines studies on L3 regressive transfer in both the phonological and morphosyntactic domain that have direct or indirect implications on the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b) and the Phonological Permeability Hypothesis (PPH, Cabrelli Amarao & Rothman, 2010) from which the DSH has originated. In particular, the studies have highlighted the role of L2 experience and L2 and L3 proficiency as the confounding variables when examining L3 regressive transfer effects. To offer a chronological overview, the section initiates with a survey of studies with implications on the PPH and subsequently proceeds to investigate the studies with implications on the DSH.

2.2.1 The PPH and the Effect of L2 Experience As a Confounding Factor

Further studies on L3 regressive transfer in the phonological domain examining the effect of L3 on L2 and/or L1 have been conducted with their direct or indirect implications on the PPH. In the case of Tordini, Galatà, Avesani, and Vayra (2018) and Tordini (2019), heritage speakers of Italian dialect with L2

standard Italian learning L3 English were examined on their production of L1 coronals and vowels, and as a result, L1 phonetic features were shown to exhibit stability with no evidence of L3 regressive transfer. Although the experimental results of Tordini et al. (2018) and Tordini's (2019) studies are not a full test of the PPH and age effects on L3 regressive transfer, it offers partial support to the PPH in that early acquired L1 systems are not affected by the acquisition of L3 phonological values.

On the other hand, two studies of Sypiànska (2016) and Liu, Gorba, and Cebrian (2019) offer counterevidence to the PPH, and further provides the L2 experience factor as the potential underlying factor of L3 regressive transfer effects. To be specific, Sypiańska's (2016) study provides conflicting evidence for the PPH where Polish-Danish L2 group and Polish-Danish-English L3 group were examined on their vowel production. As a result, effects of L2 Danish and L3 English on L1 Polish was found, but no cross-linguistic influence was found in the direction of L3 to L2, contradictory to the PPH. Sypiańska, as a result, suggests that Cabrelli Amaro's (2017a) results may have been influenced by the fact that the participants lived in an L1 English setting, thus leading to less frequent usage of L2 Spanish, contrary to the participants in Sypiańska's study who were immigrants in the L2 context. Therefore, L2 language use and relative frequency (i.e., L2 experience) are noted by Sypiańska as the learner variable that ought to be taken into account in examining L3 regressive transfer and testing the PPH,

with the researcher citing Schmid (2007) that has highlighted on the crucial role of this language experience factor in L1 attrition.

Liu et al. (2019) examining a Mandarin-English L2 group and Mandarin-English-Spanish L3 group regarding their perception of voice onset time (VOT) for stop consonants offer additional support to Sypiańska's (2016) proposal that accentuated the L2 experience factor as potentially underlying L3 regressive transfer effects. To be specific, the researchers were not able to find evidence of L3 Spanish effect on L2 English stop consonants, but effects of L3 and/or L2 on L1 Mandarin stop consonants were noted. This larger effect of L3 on L1 when compared with that on L2 was postulated to serve as counterevidence to the PPH by the researchers. Considering the fact that the L2 and L3 participants in Liu et al.'s study were respectively located in the L2 and L3 setting, language use and relative frequency (i.e., language experience) noted in Sypiańska's study are again highlighted as the potential underlying factor of L3 regressive transfer by the researchers.

All in all, the four studies conducted concerning L3 regressive transfer in the phonological domain, with their direct or indirect implications on the PPH either lent partial support for the hypothesis or presented conflicting evidence regarding the validity of the PPH. For the studies arguing against the PPH with contradictory evidence for the PPH, language use and relative frequency (i.e., language experience) have been highlighted by the researchers to potentially underlie L3 regressive transfer effects. Hence, in the current study, the L2 and L3

participants were carefully matched not only in terms of their L2 AoA but also in their L2 experience, considering the recognized role of L2 experience as a factor in predicting L3 regressive transfer.

2.2.2 The DSH and the Effects of L2 and L3 Proficiency as a Confounding Factor

Since the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b) was more recently proposed when compared with the PPH, the experimental study conducted by Puig-Mayenco (2022) discussed in Section 2.1.2 is the sole study that directly relates to the implications of the DSH. Previous studies examining the existence of L3 regressive transfer in the morphosyntactic domain (not necessarily focusing on its differential effects on L2 versus L1), however, offer indirect implications on the DSH by highlighting the role of additional variables of L2 and L3 proficiency underlying L3 regressive transfer effects. The following, in turn, provides a chronological overview of previous studies that examined L3 regressive transfer effects in the morphosyntactic domain, ranging from studies that confirmed the existence of cross-linguistic transfer from L3 to L2, studies that highlighted the role of L2 and L3 proficiency, to studies that focused on how cross-linguistic transfer from L3 to L2 surpassed that from L1 to L2.

Previous research on L3 regressive transfer in the morphosyntactic domain initially sought to identify whether effects of L3 on L2 exist as a possible source of cross-linguistic influence. The following enumerates some of the earliest

efforts to identify whether and how L3 has its effects on the previously acquired language system of L2. To begin with, Hui (2010) employed a picture elicitation task with a Cantonese-English L2 group and Cantonese-English-French L3 group, with results revealing that the production of L2 English relative clauses between the two groups was qualitatively and quantitatively different. That is, with cross-linguistic influence from L3 French, reduced relative clauses were relatively less produced and human relative pronoun (i.e., *who*) was more frequently inserted for non-human antecedents in the L3 group. Likewise, Cheung (2011) investigated a Cantonese-English L2 group and Cantonese-English-German L3 group in both their production and comprehension of L2 English tense-aspect use through an acceptability judgment task and narrative writing task. Findings demonstrated that the L3 group exhibited a stronger tendency in both accepting and using present perfect even when denoting past events without current relevance (negative influence from *perfekt* tense in German). In addition to the negative influence, positive influence from L3 German was also noted. That is, L3 German acquisition was shown to neutralize the negative L1 influence of using present tense with reference to the past in the narrative writing task. With both negative and positive cross-linguistic influence from L3 German to L2 English noted for the L3 group when compared with the L2 group for both comprehension and production, Cheung notes that there is the need for distinguishing L2 and L3 acquisition in that there exist additional paths of transfer in the case of L3 acquisition.

On noting the limitations of his study, however, Cheung (2011) acknowledged that it failed to strictly control neither L2 nor L3 proficiency in investigating L3 regressive transfer. This is in line with De Angelis (2007) who highlighted that both "proficiency in the target language and proficiency in the source language" matter in experimental studies concerning cross-linguistic influence (p. 33). According to De Angelis, although proficiency level of source languages has rarely been at the center of research (especially in L2 acquisition research where only the target language proficiency is at the focus), proficiency information regarding previously acquired non-native source languages has become increasingly important from a methodological perspective in third or additional language acquisition research. That is, when research in the field of third or additional language acquisition is concerned, not only proficiency in the target language but also proficiency in the source language ought to be taken into account as the factors that affect cross-linguistic influence.

Hence, subsequent studies examining possible sources of cross-linguistic influence from L3 to L2 have sought to either control or take into account both L2 and L3 proficiency following Cheung's (2011) acknowledgement in line with the claims of De Angelis (2007). For example, Aysan (2012) examined two L3 groups of Turkish-English-Italian and Turkish-English-French group and found negative influence of L3 Italian on L2 English subject pronoun use (when compared with the L3 French group and L2 controls). Through grammaticality judgment tasks testing English subject pronoun use, Aysan identified L3 regressive transfer from

L3 Italian which is a pro-drop language and thus allows subject pronoun omission. On the contrary, with French being a non-pro-drop language in line with English disallowing such subject pronoun omission, the Turkish-English-French L3 group performed essentially on par with the Turkish-English L2 group; in the course of such examination, the participants' L2 and L3 proficiency were controlled so that they were of comparable levels through proficiency tests.

Furthermore, Tsang (2016) examined a Cantonese-English-French L3 group together with a Cantonese-English L2 group to explore effects of L3 regressive transfer on L2 English nominal number agreement. Two tasks were employed to see how L3 French affected L2 English number agreement knowledge and production. First, a grammaticality judgment-correction task asked the participants to judge the grammaticality of sentences covering English number agreement (e.g., *Would you like to buy a few pumpkin for the kids?*) and to correct the sentence to which they gave low acceptability. Next, a timed free writing task was additionally employed to examine their production of English plural morphology. With French behaving similar to English in terms of nominal number agreement, where morphological marking does exist to indicate number agreement (contrary to Cantonese), L3 French was shown to have a positive effect on the participants' production of English plural morphology by means of neutralizing either redundancy or omission of plural '-s', but not in their grammatical judgment-correction task results. During such investigation, Tsang strictly controlled L2 proficiency and further examined L3 proficiency as the modulating

factor affecting L3 regressive transfer. As a result, L3 regressive transfer effects were shown to take place only when the learner's L3 proficiency reached a certain threshold.

Ahn and Jang (2019) and Ahn and Mao (2019) offer the two additional instances where L3 regressive transfer in the morphosyntactic domain was investigated with both source and target language proficiency strictly controlled. In these cases, both L2 and L3 proficiency were strictly controlled through proficiency tests when examining potential sources of transfer (and further scrutinized in the case of Ahn & Mao, 2019 through a separate study of Ahn, Cho, Hwang, Lim, & Mao, 2022). Through a series of experiments, the researchers confirmed Foreign Language Effect (Meisel, 1983) in L3 acquisition where cognitive similarities between L2 and L3 crucially factor into cross-linguistic influence, leading to a larger influence of L3 on L2 when compared with that of L1 on L2.

Specifically, Ahn and Jang (2019) examined L3 regressive transfer effects on interpretation of English definite plurals through three series of experiments. With the participants of a: Korean-English L2 group, Korean-English-French L3 group, French-English L2 group, Korean-English-Chinese L3 group, Chinese-English L2 group, Chinese-English-Korean L3 group, and finally, a native speaker control group, three series of experiments were conducted to reveal significant influence of L3 (but not L1) on L2 (regardless of typological proximity between the languages). Of the three series of experiments conducted with the varying

language groups in Ahn and Jang (2019), the first experiment with a Korean-English L2 group and Korean-English-French L3 group is most relevant to the present study. With Romance languages (e.g., French, Spanish) and English having a different interpretation of definite plurals, experimental results from a truth-value judgment task (TVJT) revealed that the L2 and L3 groups were significantly different in their interpretation of English definite plurals. That is, L2 English was shown to be significantly impacted by L3 French for the Korean-English-French L3 group. The participants of the L3 group were intermediate learners of French with proficiency around B1 of Common European Framework of Reference for Languages (CEFR) level, confirming Cabrelli Amaro et al.'s (2015) noting that L3 regressive transfer may take place even after minimal exposure to L3 of 16 weeks. The present thesis, in line with Ahn and Jang, examines the linguistic items of English bare and definite plurals, focusing on L3 regressive transfer effects for the Korean-English-Spanish L3 group of intermediate L3 proficiency whose L3 has interpretation of bare and definite plurals which converge with that of French; this makes Ahn and Jang's first experiment a reference point for the present study despite the fact that the two diverge in terms of its purposes.

Likewise, Ahn and Mao (2019) investigated L3 regressive transfer effects on L2 English reflexive binding interpretation, and as a result, Chinese-English L2 learners and Chinese-English-Korean L3 learners exhibited a significantly different performance attributable to L3 regressive transfer. Post-hoc comparison

with a Korean-English L2 group further revealed more robust role of L3 on L2 when compared with that of L1 on L2 in line with Ahn and Jang (2019). Furthermore, Ahn et al. (2022) later confirmed through a separate analysis that it was indeed positive transfer from Korean (and not differences in L2 proficiency) that led to better performance in the TVJT testing English reflexive binding interpretation for the Chinese-English-Korean L3 learners.

All in all, previous studies on L3 regressive transfer in the morphosyntactic domain have noted on cross-linguistic transfer in the direction of L3 to L2, with some focusing on how its degree exceeds that of L1 on L2 (Ahn & Jang, 2019; Ahn & Mao, 2019). In doing so, the importance of L2 and L3 proficiency as the underlying factors in L3 regressive transfer has been acknowledged, with Cheung (2011) having emphasized their role in examining cross-linguistic influence. That is, both "proficiency in the target language and proficiency in the source language" (De Angelis, 2007, p. 33) ought to be taken into account when examining cross-linguistic influence in the field of third or additional language acquisition in which the previously acquired language is also a non-native language. Such emphasis on the two variables of L2 and L3 proficiency from previous studies examining L3 regressive transfer in the morphosyntactic domain provides the following implication in testing the DSH: L2 and L3 proficiency ought to be taken into account on top of the L2 AoA variable when examining L3 regressive transfer effects, with their having the potential to act as confounding variables.

All in all, having examined previous studies conducted concerning L3 regressive transfer, centering around the two hypotheses of the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b) and the Phonological Permeability Hypothesis (PPH, Cabrelli Amaro & Rothman, 2010) from which the DSH originated, the following learner variables have been identified as the potential underlying sources of L3 regressive transfer: L2 AoA, L2 experience, and L2 and L3 proficiency. L2 AoA (operationalized as age of 12 following Lenneberg, 1967) has been noted predominantly from the two hypotheses of the PPH and the DSH. L2 experience factor has been noted from both Sypiańska (2016) and Liu et al. (2019), according to which language use and relative frequency in respective languages of L1 and L2 are postulated to factor into permeability of the languages. Finally, L2 and L3 proficiency have been noted from previous studies examining L3 regressive transfer effects in the morphosyntactic domain reviewed in the present section.

Therefore, the present study closely matched the L2 and L3 group in terms of their L2 AoA, L2 proficiency, and L2 experience in light of previous studies that highlighted their role in predicting L3 regressive transfer. Therefore, the two groups with the only distinguishing factor of L3 acquisition, were compared to identify the effect of L2 AoA on L3 regressive transfer and to further test the DSH. The following section, in turn, provides a detailed analysis of the linguistic items examined for the purpose, English bare and definite noun phrases (NPs), focusing

on both the cross-linguistic differences and influence among the languages of Korean, English, and Spanish.

2.3 Bare and Definite Plural NPs in Korean, English, and Spanish

To examine the effect of L2 AoA on L3 regressive transfer with the Korean-English-Spanish L3 group (of advanced L2 proficiency and of L2 AoA under 12) and further for testing the DSH, the linguistic item of English bare and definite plural noun phrases (NPs) was examined for three reasons. First, L3 regressive transfer effects in English definite plurals interpretation were noted even for the intermediate L3 learners in Ahn and Jang's (2019) Korean-English-French L3 group. This is relevant to the present study in that the participants are also of intermediate proficiency in L3 Spanish, and in that French and Spanish share interpretation of bare and definite plurals with their both being Romance languages. Second, cross-linguistic differences on interpretation of bare and definite plurals in Romance languages and English have been scrutinized through theoretical literature (Chierchia, 1998; Longobardi, 2001), and acquisition studies in the realm of L2, L3, and heritage acquisition delving into cross-linguistic influence among bare and definite plurals in Romance languages, English, and languages without articles abound (e.g., Ahn & Jang, 2019; Ionin & Montrul, 2010; Montrul & Ionin, 2012). Such well-documented previous studies on cross-linguistic differences and cross-linguistic influence among different language

groups may well contribute to a much more viable identification of the effect of L2 AoA on L3 regressive transfer as well as testing of the DSH. Finally, with none of the languages of Korean, English, and Spanish being cognates and none of the three languages sharing grammatical features with regards to bare and definite plural NPs, the two confounding variables (i.e., cumulative influence and cognate languages) noted in Cabrelli Amaro (2017b) in testing the DSH are removed in advance in the present study.

This section focusing on linguistic analysis of Korean, English, and Spanish bare and definite plurals begins by conducting a comprehensive examination of the cross-linguistic differences among the linguistic items of bare and definite plural NPs in Korean, English, and Spanish. Afterwards, it delves into an investigation of the cross-linguistic influence identified from previous L2 and L3 acquisition studies, particularly focusing on how Korean and Spanish affect the interpretation of English bare and definite plurals.

2.3.1 Cross-linguistic Differences Among the Interpretation of Korean, English, and Spanish Bare and Definite Plural NPs

There exists a well-known difference in the interpretation of bare and definite plurals between Romance languages (Spanish in the case of the present study) and English: while definite plurals like *the lions* can denote the entire kind of lions (generic interpretation) for Spanish, the same does not hold true for

English. This has led to much theoretical literature regarding how plural NPs are interpreted for English and Romance languages, in which generic interpretation has been the main focus (Chierchia, 1998; Longobardi, 2001). The following examples illustrate how there exists "cross-linguistic variation in genericity marking" (Ionin & Montrul, 2010, p. 879) for the three languages of Korean, English, and Spanish examined in the present study.

Korean is distinct from English and Spanish in that it lacks articles altogether. Generic reference is thus generally expressed through bare NPs with no plural marking and no determiner as illustrated in the following example (9a):

(9) a. Saca-nun wihemha-ta.
lion-TOP dangerous-DECL
"Lions are dangerous / ?The lion is dangerous."
[√generic, √/?specific]

b. Saca-tul-un wihemha-ta.
Lion- PL -TOP dangerous-DECL
"Lions are dangerous / ?The lions are dangerous."
[√generic, √/?specific]

c. Ku saca-tul-un wihemha-ta.
That lion-PL-TOP dangerous-DECL
"Those lions are dangerous."
[∗generic, √specific]

(Ionin & Montrul, 2010, p. 881)

Although there does exist controversy over whether all animate NPs with plural marker *tul* as in example (9b) can bear generic reference (see Kim, 2005; Nemoto, 2005, among others), informants of Ionin and Montrul (2010), in line with Kim have agreed that animate plural NPs are fully compatible with generic readings. The test items of this study, therefore, follow Ionin and Montrul in including only animate plurals where generic reading is available for the purposes of examining cross-linguistic influence. It has additionally been noted that Korean-speaking informants of Ionin and Montrul evaluated it more natural to interpret Korean bare NPs (whether singular or plural) as having generic reference, even though they do have specific-reference readings (e.g., when used anaphorically with second mention) available according to Nemeto and Kim. That is, specific readings are expressed with demonstratives in Korean as in (9c), and the Korean equivalents of (9a) and (9b) included in the test items are more compatible with generic interpretation rather than a specific one.

Examples of plural NPs in English and Spanish are illustrated in example (10) and (11): as for English, genericity (but not specific reference) is expressed through bare plurals as in (10a), while definite plurals and demonstrative plurals allow only specific reference as in (10b) and (10c). That is, only some salient lions are dangerous for (10b) and (10c), while this reading is not compatible with (10a) in which the statement cannot be about a specific group of lions.

(10) a. Lions are dangerous. [√generic reference, ∗specific reference]

b. The lions are dangerous. [∗generic reference, √specific reference]

c. These lions are dangerous. [∗generic reference, √specific reference]

(Ionin & Montrul, 2010, p. 880)

Spanish, in line with most of other Romance languages, uses definite plurals to express genericity, as shown from example (11b). Example (11) illustrates how Spanish differs from English in that: bare plurals are ungrammatical in the preverbal position as in (11a); definite plurals allow both generic and specific reference as in (11b). Spanish demonstrative plurals, however, in line with English (and Korean), allow only specific interpretation as in (11c).

(11) a. * *Leones* *son* *peligrosos.*
lions are dangerous

b. *Los* *leones* *son* *peligrosos.*
the-PL lions are dangerous
'The lions are dangerous.' [√specific reference, √generic reference]

c. *Estos leones son peligrosos.*

these lions are dangerous.

'These lions are dangerous.' [√specific reference,

*generic reference]

(Ionin & Montrul, 2010, p. 880)

Regarding the noted cross-linguistic difference with generic reference (or generics) in the Romance languages when compared with English, both syntactic and semantic approaches have sought to explicate such difference. As for the syntactic approach, Romance languages' entailing overt determiners is attributed to syntactic requirement, contrary to English where null determiners are allowed. This syntactic requirement has then been postulated to have consequences for cross-linguistic differences regarding article use in: generic reference, inalienable possession constructions, and proper names (Longobardi, 1994, 2001; Vergnaud & Zubizarreta, 1992). Semantic accounts of Chierchia (1998) and Dayal (2004), on the other hand, focus on differences in the semantics of definite articles in the two languages: definite articles of both English and Romance languages (Spanish in the present study) lexicalize *maximality*, the semantic operation by which the maximal individual set is picked out through mapping of sets to individuals. This results in *the lions* as in (10b) to be interpreted the "entire sets of lions in the discourse" (Ionin & Montrul, 2010, p. 882). On the other hand, Romance languages have their definite articles lexicalize *kind formation* in addition to

maximality. This semantic operation maps properties to individuals so that Spanish, as one of the Romance languages, can allow *los leones* to be interpreted as *either* the maximal set (non-generic interpretation parallel to English) *or* "the kind whose members have the property of lions" (Ionin & Montrul, 2010, p. 882). Therefore, Spanish definite plurals as in (11b) allows generic reference as well as non-generic reference each stemming from the two distinct semantic operations of *kind formation* and *maximality*.

2.3.2 The Role of Korean and Spanish on English Bare and Definite Plural NP Interpretation

Among the studies that examined cross-linguistic influence between and among interpretation of bare and definite plural NPs in English, Korean, and Spanish in varying learner groups of L2, L3, and heritage speakers (e.g., Ionin, Montrul, Kim, & Pillippov, 2011; Ionin, Montrul, Santos, 2011; Montrul & Ionin, 2012), three are the most relevant to the present study with their implications on cross-linguistic influence from Korean and Spanish to English bare and definite plurals interpretation. Therefore, the three studies of: Ionin and Montrul (2010), Ionin, Montrul, and Crivos, (2013), and Ahn and Jang (2019) will be scrutinized in detail in the present section.

Ionin and Montrul's (2010) study is the first instance where interpretation of bare and definite plural NPs was examined in the context of adult second

language acquisition. They focused on English L2 learners, where the Spanish-English L2 group and Korean-English L2 group were examined to identify the role of L1 transfer in L2 English acquisition. The authors examined different learning tasks that the Spanish-English L2 group and Korean-English L2 group were faced with through a careful analysis of cross-linguistic differences pertaining to interpretation of bare and definite plurals in the three languages. As for the Spanish speakers, they would have to learn that bare plurals are grammatical in English with generic interpretation, and that English definite plurals disallow generic interpretation (in the face of negative L1 transfer). The Korean speakers, given L1 use of bare plurals in definite environments, would have to learn that English bare plurals disallow specific readings, unlike Korean. With nonexistence of a definite article in Korean, however, they would not be faced with negative L1 transfer in the case of English definite plurals but would still have to learn that English definite plurals lexicalize *maximality*, not *kind formation* through linguistic input. As a result, Ionin and Montrul expected the Korean speakers to be less target-like in their interpretation of bare plurals when compared with the Spanish speakers from their erroneously allowing specific interpretation of bare plurals from L1 transfer. On the other hand, misinterpretation of English definite plurals as denoting genericity was predicted by the researchers to be more prevalent for Spanish speakers (with negative L1 transfer) when compared with Korean speakers (without neither positive nor negative L1 transfer).

The experimental method of TVJT was used to probe the Spanish-English L2 group and Korean-English L2 groups' interpretation of English bare and definite plurals. Each TVJT item entailed a story, picture, and a corresponding test sentence that the participants were to judge as true or false based on the context of the story. The context of the story in which animals bearing an unexpected characteristic for their species were described allowed for juxtaposition of both generic and specific readings in the context. Each story appeared three times with the test sentence containing once of the following NPs: bare plurals, definite plurals, and demonstrative plurals. The demonstrative plural was included as the control item that shared specific interpretation among the three languages of Korean, English, and Spanish. Example (12) illustrates the example of TVJT item incorporated in the experiment of Ionin and Montrul (2010):

(12) Sample test story:

In our zoo, we have two very unusual tigers. Most tigers eat meat all the time. But our two tigers are vegetarian: They love to eat carrots, and they hate meat.

Possible target sentences:

a. The tigers like carrots. → TRUE

b. Tigers like meat. →TRUE

c. These tigers like meat. → FALSE

(Ionin & Montrul, 2010, pp. 891-892)

The researchers' expectations that postulated differential interpretation of English bare and definite plurals for the Spanish-English L2 group and Korean-English L2 group based on their differential cross-linguistic influence from the L1 were indeed borne out through the results of the TVJT. When the Spanish-English L2 group and Korean-English L2 group were matched with English proficiency as well as overall knowledge of English articles (i.e., article accuracy), Korean speakers were lowest in their accuracy of the bare plurals condition of the TVJT, and the Spanish speakers the lowest in the definite plurals condition. That is, Korean speakers were less accurate than Spanish speakers in assigning generic reference to English bare plurals, misinterpreting them as having specific reference consistent with L1 transfer effects. On the other hand, Korean speakers were shown to be significantly more accurate in assigning specific reference to English definite plurals when compared with Spanish speakers.

Ionin and Montrul claim that their experimental results exhibit clear evidence of L1 transfer effects in interpretation of English bare and definite plurals. With Korean allowing the use of bare plurals in specific environments, L1 transfer leads the Korean-English L2 group to inaccurately interpret English bare plurals as having specific readings. They are less accurate than the Spanish-English L2 group whose L1 disallows bare plurals in the preverbal position. As for the Spanish-English L2 group, L1 Spanish in which lexicalization of *kind formation* (in addition to *maximality*) is allowed for definite plural NPs results in cross-

linguistic influence only for the Spanish-English L2 group in their interpretation of English definite plurals. They are significantly more affected in their interpretation than proficiency-matched Korean-English L2 group with lack of definite articles in the L1. In addition, a follow-up study in Ionin and Montrul confirmed that it is possible for the L2 learners to recover from this cross-linguistic influence from the first language. That is, advanced proficiency and increased immersion in English allowed for recovery from the non-target-like interpretation of English bare and definite plurals in both Korean-English L2 learners and Spanish-English L2 learners.

Next is the research conducted by Ionin, Montrul, and Crivos (2013) that investigated bi-directional nature of the aforementioned cross-linguistic influence between English and Spanish plural NPs for the English-Spanish L2 group and Spanish-English L2 group. They again adopted the TVJT experiment to probe bi-directional cross-linguistic influence from both English to Spanish and Spanish to English, and Spanish version of the TVJT was translated from the English version in Ionin and Montrul (2010) for the purpose. The design of the Spanish TVJT, however, was different from the English TVJT in example (12). With Spanish bare plurals being ungrammatical in preverbal positions, interpretation of bare plurals could not be tested through the TVJT; after all, the participants cannot judge an ungrammatical sentence as true or false. Therefore, as illustrated in example (13-14), when Spanish TVJT was translated from the English TVJT, definite plurals appeared twice, once to be true on generic interpretation (and false on specific

interpretation) and once to be true on specific interpretation (and false on generic interpretation).

(13) Sample test story: English study

Everyone knows that a zebra always has stripes. But not in our zoo! Our zoo has two zebras, and they are really unusual: they have spots instead of stripes! That's really strange.

a. Zebras have stripes. TRUE

b. The zebras have spots. TRUE

c. These zebras have stripes. FALSE

(Ionin et al., 2013, pp. 494-495)

(14) Sample test story: Spanish study

El zoológico de Buenos Aires tiene dos cebras nuevas. Estas cebras no son comunes: tienen manchas en vez de rayas. ¡Son muy extrañas!

a. Las cebras tienen rayas. [The zebras have stripes.] TRUE generic, FALSE specific

b. Las cebras tienen manchas. [The zebras have spots.] FALSE generic, TRUE specific

c. Estas cebras tienen rayas. [These zebras have stripes.] FALSE

(Ionin et al., 2013, p. 495)

As a result, interpretation of Spanish definite plurals and English bare and definite plurals each revealed effects of negative L1 transfer. As for the English-Spanish L2 group, they opted for specific reference in interpreting Spanish definite plurals despite the task bias for generic reference. On the other hand, the Spanish-English L2 group significantly opted for generic reference in interpreting English definite plurals despite its ungrammaticality in English. Moreover, they were slightly less accurate on interpretation of bare plurals when compared with the English native speakers, opting for specific reference contra the target interpretation. In the case of this bi-directional study, however, the Spanish TVJT had its limitations in its format in that: first, it only allowed for identification of preferences regarding whether definite plurals are to be interpreted as having generic *or* specific reference; second, it was impossible to test the knowledge of Spanish bare plurals through the TVJT with their being ungrammatical in the preverbal position. Hence, additional methodology of AJT was adopted to further examine how the English-Spanish L2 group and Spanish-English L2 group judge the grammaticality of English and Spanish bare and definite plurals in generic versus specific contexts.

In the AJT, a paragraph-long story was followed by five different target sentences that contained the following different forms of NP subjects: "bare plural (*chairs*), definite plural (*the chairs*), indefinite singular (*a chair*), definite singular (*the chair*), and bare singular (*chair)*" (Ionin et al., 2013, p. 505). The task was conducted in English for the Spanish-English L2 group and in Spanish for the

English-Spanish L2 group to investigate effects of bi-directional L1 transfer effects in English and Spanish bare and definite plurals (with the Spanish version translated from the English one). Ionin et al. (2013), with their study focusing solely on plural noun phrases in English and Spanish, examined and discussed only the two NPs of bare and definite plural NPs in their study.

The first category of specific-plural category had its purpose of probing absolute judgments of Spanish and English bare and definite plurals with specific readings. The paragraph-long story in this category ensured that the NPs discussed in the stories bear unusual/noncharacteristic properties (e.g., barking birds, orange chairs) barring generic interpretation. As for the English AJT, this led to the target response of continuation sentence with the definite plural NP subject because only definite plurals carry specific readings contra bare plurals. On the other hand, for the Spanish AJT, since preverbal bare plurals are ungrammatical in Spanish and both generic and specific readings are available to Spanish definite plurals, the context in this category led to the target response of continuation sentence with a definite plural NP subject.

Next, the generic category served the purpose of examining absolute judgments of Spanish and English bare and definite plurals with generic readings. The stories of the generic category have been designed to ensure that no specific entities are discussed. Therefore, the target continuation sentence for this category were to be the sentences that discuss the typical properties of what the subject NP referred to (e.g., toy animals that are "typically" good children's gifts). In the

English AJT, the target response was the continuation sentence with bare plural NP subjects, with its generic interpretation in English contra definite plurals. In the Spanish AJT, the target response was the continuation sentence with definite plural NP subjects, stemming from the ungrammaticality of preverbal bare plural subjects in Spanish coupled with availability of both generic and specific readings in the case of Spanish definite plurals.

The experimental results of the AJT again revealed bi-directional cross-linguistic influence in both the English-Spanish L2 group and Spanish-English L2 group. First, the English-Spanish L2 group were shown to be fully target-like in the specific-plural category (where the target response for both English and Spanish is definite plurals) but less so in the generic category. That is, although both low/intermediate and high proficiency English-Spanish L2 learners rated bare plurals well below definite plurals in the case of specific-plural category like native speakers, they rated definite plurals lower and bare plurals higher than Spanish native speakers in the generic category. Likewise, the Spanish-English L2 group were non-target-like in the generic category, where the L2 learners (especially of low/intermediate proficiency) rated definite plurals too high and bare plurals too low when compared with English native speakers. For the specific-plural category, rather unexpectedly when considering how both Spanish and English opt for definite plurals for specific readings, the L2 learners were not able to exhibit target-like performance. That is, they rated bare plurals too high and definite plurals too low when compared with native speakers. The researchers

note on the following as the potential cause of the unexpected results: L2 learners may have learned only the basic grammatical facts about English, that bare plurals are allowed in the preverbal subject position, but not the interpretation of plural NPs in English pertaining to bare versus specific plurals with generic versus specific readings.

Finally, as previously mentioned, Ahn and Jang's (2019) study where the researchers examined both progressive and regressive transfer on English definite plural NP interpretation from Korean and French (bearing parallel interpretation of bare and definite plurals to Spanish as one of the Romance languages) is highly relevant to the present study. The research was conducted with the participants of a Korean-English L2 group, Korean-English-French L3 group, and French-English L2 group with Ionin and Montrul's (2010) TVJT experiment adapted to test the participants' interpretation of English definite plurals. The three groups were closely matched in their English proficiency as well as article accuracy following Ionin and Montrul. Their TVJT results revealed once again that there was negative transfer from French to English (whether be it L1 or L3) with regards to interpretation of English definite plurals. That is, the French-English L2 group and Korean-English-French L3 group exhibited significantly different performance when compared with the Korean-English L2 group and native English controls: TVJT scores on interpretation of English definite plurals were much lower for the group that acquired French as either a first or third language, showing signs of negative language transfer. Furthermore, negative transfer from

L3 French to L2 English (L3 regressive transfer) took place even when the L3 participants were of intermediate proficiency (B1 in their mini DELF test result).

Based on previous studies that have examined the role of Korean and Spanish on interpretation of English bare and definite plurals, it can be predicted that the Korean-English-Spanish L3 group would exhibit optionality in their interpretation of English bare and definite plurals in case they exhibit L3 regressive transfer effects. In order for reliability and comparison purposes, the present study strictly followed the testing procedures of previous studies that explored cross-linguistic influence on interpretation of bare and definite plurals among the three languages: both TVJT and AJT (adapted from Ionin & Montrul 2010; Ionin et al., 2013) are adopted for the purpose of examining both interpretation and absolute judgments pertaining to how bare and definite plurals in both English and Spanish are interpreted, and the L2 and L3 participants have been closely matched in their English proficiency as well as article accuracy.

2.4 The Present Study

Through close examination of previous studies, the following research gaps were noted. First and foremost, not much research has been conducted in the field of L3 acquisition concerning regressive transfer, and research on regressive transfer (in the direction of either L3 to L2 and/or L1) in the morphosyntactic domain is much more scarce. In fact, most research on the subject has been

conducted either in the morphological or phonological domain according to Ahn and Mao (2019). Second, the present study, in addition to its adding to the rather unexplored research of L3 regressive transfer in the morphosyntactic domain, seeks to identify the effect of L2 AoA on L3 regressive transfer and further test the DSH. The recently proposed Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b) postulates differential stability in the language system subject to critical period operationalized as age of 12 following Lenneberg (1967).

Concerning the DSH, there exist inconsistent findings in the studies of Cabrelli Amaro, Amaro, and Rothman (2015) and Cabrelli Amaro (2017b). In Cabrelli Amaro et al. (2015) in which the DSH was first proposed, the English-Spanish-Brazilian Portuguese (BP) L3 group was shown to be affected in their knowledge of L2 Spanish subject-to-subject raising over an intervening dative experiencer in an infinitival clause (TPExp) from BP, but not the Spanish-English L2 group on their L1 Spanish from English. In Cabrelli Amaro, however, the hypothesis was only partially confirmed, because contrary to the expectations of the DSH, both the mirror-image participant groups of Spanish-English-BP L3 and English-Spanish-BP L3 groups were affected in their knowledge of L1 and L2 Spanish (TPExp) as a result of L3 BP acquisition. Although it was the case that English-Spanish-BP L3 group exhibited significantly more influence from L3 on their L2 Spanish when compared with that on L1 Spanish of the Spanish-English-BP L3 group, L3 influence on L1 was unexpected on the original tenets of the DSH proposed in Cabrelli Amaro et al.. In the face of such conflicting results,

Cabrelli Amaro posits cumulative influence from English and BP with identical feature configuration of TPExp on Spanish, and/or the cognate status of Spanish and BP as the confounding variables that may have brought about the unexpected result.

The present study, therefore, bridges the aforementioned research gaps through examining the effect of L2 AoA on L3 regressive transfer and testing the DSH with the participants of a Korean-English L2 group and Korean-English-Spanish L3 group in their interpretation of English bare and definite plurals. The L2 and L3 group have been closely matched in terms of their L2 profiles that have been noted from previous studies to potentially affect L3 regressive transfer effects (i.e., L2 AoA, amount of L2 experience, L2 proficiency) as well as their article accuracy (based on Ionin & Montrul, 2010), so that the only distinguishing factor between the two groups is the presence or absence of L3 acquisition. The participant groups and linguistic items examined provide an ideal test case because none of the languages of Korean, English, and Spanish are cognates and all the languages have diverging interpretation in terms of both bare and definite plurals. Therefore, confounding variables of cumulative influence and cognate languages noted in Cabrelli Amaro (2017b) are removed in the present study.

To recapitulate, the present study examines the effect of L2 AoA on L3 regressive transfer and further tests the DSH with the participants of a Korean-English L2 group and Korean-English-Spanish L3 group. Considering how the L3 participants are of advanced L2 English proficiency with their L2 AoA

categorically under the age 12, the DSH would predict the Korean-English L2 group and Korean-English-Spanish L3 group not to be significantly different in their knowledge of L2 English bare and definite plurals. Two research questions guiding the present thesis are restated in the following:

1. Are Korean-English-Spanish L3 learners (with advanced L2 proficiency and L2 AoA under 12) subject to L3 regressive transfer?
2. How does the result support the Differential Stability Hypothesis?

CHAPTER 3.

METHODOLOGY

This chapter demonstrates the methodological design used for the present study. Section 3.1 illustrates the participant information of both the experimental group and the control group. Section 3.2 provides information about the test materials incorporated in the current study, the English and Spanish Truth Value Judgment Task (TVJT), English and Spanish Acceptability Judgment Task (AJT), English and Spanish AJT on overall knowledge of articles, English and Spanish language proficiency test, and finally, a language background survey. Section 3.3 introduces how the tasks proceeded for both the experimental group and the control group. Finally, Section 3.4 presents the statistical analysis procedure of the collected data.

3.1 Participants

In the current study, 46 adults were recruited in total. As for the control group, 24 Korean-English L2 learners who were of advanced English proficiency (equivalent to CEFR level of C1 and C2) participated in the study.[3] As for the

[3] Korean-English L2 participants and Korean-English-Spanish L3 participants of advanced English proficiency in the present study were recruited from the following pools as below.

experimental group, 22 Korean-English-Spanish L3 learners who were of equivalent level of English proficiency with the control group (CEFR level of C1 and C2) took part in the present study. However, with the present study's purpose being of identifying the effect of L2 AoA on L3 regressive transfer and further of testing the DSH (Cabrelli Amaro, 2017b), the screening process of confirming target-like acceptance of bare and definite plurals in Spanish left us with only 7 L3 participants (a common and unfortunate hazard of L3 research). That is, in order for confirming L3 regressive transfer effects and for testing the DSH, participants in the L3 group had to exhibit their mean acceptability score of Spanish bare and definite plurals in generic and specific contexts comparable with

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> i) Korean-English L2 participants were enrolled in a university in Seoul, South Korea, and the screening process checked for 1) whether they have a valid score (within two years of test-taking) of minimum 95 in TOEFL, 945 in TOEIC, and 427 in New TEPS. The score range is equivalent to C1 and C2 level in the CEFR; and 2) lack of an additional language.
>
> ii) Korean-English-Spanish L3 participants were enrolled in a university in Seoul, South Korea. The students have been learning Spanish for at least a year in the classroom setting, having taken at least two courses in Spanish at the university level. The screening process again checked for 1) whether they have a valid score (within two years of test-taking) of minimum 95 in TOEFL, 945 in TOEIC, and 427 in New TEPS; 2) lack of an additional language except for Spanish.

Based on language background questionnaire data, all participants were shown to have been regularly exposed to English before age 12. In addition, several participants were found to have been consistently exposed to English from as young as 3 or 4 years old, as they had been enrolled in private English institutes or English-speaking kindergartens.

Spanish control group's in Ionin et al. (2013) from which the Spanish AJT in the present study was adapted.[4] Only 7 participants in the L3 group were left with the criterion, and as a result, two groups that differ in their presence of a third language, 24 Korean-English L2 participants (7 male and 17 female) and 7 Korean-English-Spanish L3 group (2 male and 5 female), are the sources of experimental data analyzed in the present thesis.

The L2-related language profiles of the Korean-English L2 group and Korean-English-Spanish L3 group are summarized in the following Table 3.1 and Table 3.2. As for their L2 English proficiency, both groups were measured by a forced-choice cloze test of Ionin and Montrul (2010) where every seventh word was removed to be replaced by three choices, among which only one was appropriate in the contexts. (See Section 3.2.4 for detail.) Both L2 and L3

[4] To ensure that the L3 participants had acquired the knowledge of how Spanish bare and definite plurals are interpreted, native control data of the Spanish AJT (reported in Ionin, Montrul, Kim, et al., 2011, from which the current as well as Ionin et al.'s (2013) Spanish AJT was adapted) were referred to. Spanish control judgments (both means and standard deviations) of bare and definite plurals in generic and specific contexts were checked vis-à-vis those of the Korean-English-Spanish L3 participants to see whether they were comparable within the +/- two standard deviations. The criterion was established upon previous L2 acquisition and attrition studies that incorporated native speaker norms as the threshold for acquisition and/or attrition (e.g., Andringa, 2014; Cherciov, 2013). As a result, the L3 participants included in the data analysis were those that rated Spanish bare plurals low in both generic and specific contexts and Spanish definite plurals high in both generic and specific contexts to be within the +/- two standard deviation range of Spanish native speakers. Specifically, they rated bare plurals below 2.5 in generic contexts and below 2.0 in specific-plural contexts, and definite plurals over 3.0 in generic contexts and over 3.5 in specific-plural contexts out of 1 (unacceptable) to 4 (acceptable) scale. (See Ionin, Montrul, Kim, et al., 2011, p. 266 for the report of means and confidence intervals of Spanish native speaker judgments.)

participants' overall knowledge of English articles was tested through a separate AJT also adapted from Ionin and Montrul, in which basic familiarity with English articles (not necessarily focusing on bare and definite plurals) was examined to calculate the article accuracy score. (See Section 3.2.3 for detail.) The participants' past and current L2 experience of out-of-class exposure to English listed in Table 3.1 and 3.2 have been calculated as the following: past out-of-class exposure was calculated as the sum of the total out-of-class exposure through means of listening, reading, and speaking in the age range of 0-7, 8-11 12-15, 16-18 following school years of pre-school, elementary school, middle school, and high school. With each language skill in each period having answer choices ranging from 0 (never or almost never) to 3 (very frequently), the maximum possible exposure amounts to 36 (Huang, Chang, Zhi, & Niu, 2020). In turn, the current out-of-class exposure measured identically results in maximum possible exposure of 9 with its constituting of a single period. The L2 language profiles of the participants (i.e., cloze test score, article accuracy, age at testing, L2 age of acquisition, and L2 experience) were collected through GoogleForm online in the participants' home country—South Korea, through the English proficiency test, AJT on overall knowledge of articles, and language background survey.

Table 3.1

L2 English Profiles of the Korean-English L2 group

Group		Mean	SD	Range
Cloze test score (Max=40)		34.67	2.43	29-38
Article accuracy (%)		96.22	5.45	81.25-100
Age at testing (years)		25.83	3.81	21-35
L2 age of acquisition (years)		6.58	1.72	4-10
L2 experience	Past out-of-class exposure (Max=36)	17.38	7.77	3-30
	Current out-of-class exposure (Max=9)	4.63	2.12	1-9

Note. n=24*;* Age at testing data consists of 23 data with one participant's age at testing data missing; Past out-of-class exposure equals the sum of weekly exposure to reading, listening, and speaking in the age ranges of 0-7, 8-11, 12-15, and 16-18; Current out-of-class exposure equals the sum of current weekly exposure to reading, listening, and speaking

Table 3.2

L2 English Profiles of the Korean-English-Spanish L3 group

Group		Mean	SD	Range
Cloze test score (Max=40)		34.71	1.11	34-37
Article accuracy (%)		96.43	6.10	87.5-100
Age at testing (years)		22.14	2.73	18-26
L2 age of acquisition (years)		5.43	2.30	3-10
L2 experience	Past out-of-class exposure (Max=36)	21.86	5.18	15-31
	Current out-of-class exposure (Max=9)	4.57	2.07	3-9

Note. n=7; Past out-of-class exposure equals the sum of weekly exposure to reading, listening, and speaking in the age ranges of 0-7, 8-11, 12-15, and 16-18; Current out-of-class exposure equals the sum of current weekly exposure to reading, listening, and speaking

Given the limited sample sizes, a non-parametric statistical analysis of Mann-Whitney *U* test was employed for the L2 versus L3 group comparison. Upon conducting pairwise comparisons, none of the variables listed in Table 3.1 and 3.2 were found to exhibit significant differences between the two groups, except for the single variable of age at testing. That is, there was no significant difference between the two groups regarding the participants' cloze test score ($U = 90.5$, $p = .774$), the participants L2 age of acquisition ($U = 117.5$, $p = .114$), article accuracy ($U = 73$, $p = .586$), nor the participants past and current out-of-class exposure to English, $U = 56$, $p = .193$ and $U = 94.5$, $p = .630$. There did exist, however, a significant difference in the participants' age at testing ($U = 125.5$, $p = .026$). For the age at testing, the Korean-English L2 group were significantly older than the Korean-English-Spanish L3 group. Therefore, it can be concluded that the participants of L2 and L3 group as the control group and experimental group significantly differ in no other L2 language profiles (i.e., L2 age of acquisition, proficiency, amount of L2 experience, and article accuracy) other than the sole factor of age at testing (which is not so much a factor of interest in the present study). Therefore, the L2 and L3 group are comparable in the L2 language profiles that are of crucial interest to the present study, only to differ in that the L3 group has an additionally acquired third language of Spanish.

3.2 Instruments

The test items and procedure adopted in the present study significantly relied upon previous studies that examined cross-linguistic influence on interpretation of bare and definite plurals between and among Korean, English, and Spanish. This employment of test materials and test procedure from previous research has its purpose of ensuring reliability of the test materials as well as of making a comparison with the experimental results of the earlier studies. Section 3.2.1 provides details on the TVJT adopted in the present study to examine Korean-English L2 groups' interpretation of English bare and definite plurals and Korean-English-Spanish L3 groups' interpretation of bare and definite plurals in both English and Spanish. Section 3.2.2 conveys information about the AJT in this study which had its purpose of examining absolute judgements of English bare and definite plurals in generic versus specific contexts for both the L2 and L3 groups as well as of Spanish bare and definite plurals in generic versus specific contexts for the L3 group. Next, Section 3.2.3 explicates on a separate AJT measure testing the participants' overall knowledge of English and Spanish articles, Section 3.2.4 the English and Spanish proficiency test, and Section 3.2.5 the language background survey. The materials in Sections 3.2.3, 3.2.4, and 3.2.5 had their purpose of measuring learner variables to ensure that no significant difference exists in the L2 profiles of the L2 and L3 group except for the presence of an additional language of L3 Spanish.

3.2.1 English and Spanish Truth-Value Judgment Task (TVJT)

The measure of TVJT with stories was adopted in the present study to examine the interpretation of English bare and definite plurals for the Korean-English L2 group and English and Spanish bare and definite plurals for the Korean-English-Spanish L3 group. As for the English TVJT, it was adapted from Ionin and Montrul (2010) and was composed of a story with a picture, followed by a test sentence (see Appendix 1 for the experimental sentences). The test story constituted of a description of animals that bear an unexpected characteristic (e.g., two tigers that are vegetarian) for their species (e.g., most tigers eat meat all the time), which allowed for juxtaposition of a specific reading with a generic reading. Total eight stories appeared two times, once with the test sentence of a definite plural subject (e.g., the tigers like carrots), and once with a bare plural subject (e.g., tigers like meat). The sample test story and possible target sentences adopted in the present study following Ionin and Montrul is illustrated in the following example (15):

(15) Sample test story:

In our zoo, we have two very unusual tigers. Most tigers eat meat all the time. But our two tigers are vegetarian: They love to eat carrots, and they hate meat.

Possible target sentences:

a. The tigers like carrots. → TRUE

b. Tigers like meat. → TRUE

(adapted from Ionin & Montrul, 2010, pp. 891-892)

Although Ionin and Montrul (2010) had also included demonstrative plurals as the control item, with its identical interpretation in all three languages of Korean, English, and Spanish, it was not included in the present study. In line with the experimental items of Ionin and Montrul (2010), the target truth-values were counterbalanced across test items, so that four of the test stories as the above example (15) had its test sentence designed to have the target truth-value of "TRUE" for both definite and bare plurals, and the other four stories as the below example (16) had its test sentence designed to have the target truth-value of "FALSE" for both definite and bare plurals.

(16) Sample test story:

Last night, I saw a movie about two very strange chickens. They have three legs, instead of two! That's so weird. Everyone knows that a chicken normally has two legs!

Possible target sentences:

a. The chickens have two legs. → FALSE

b. Chickens have three legs. → FALSE

(adapted from Ionin & Montrul, 2010, p. 892)

The following Figure 3.1 presents the samples of how the English TVJT with stories was presented as the experimental items for the L2 and L3 participants.

Figure 3.1

A Sample of TVJT With Stories (adapted from Ionin & Montrul, 2010)

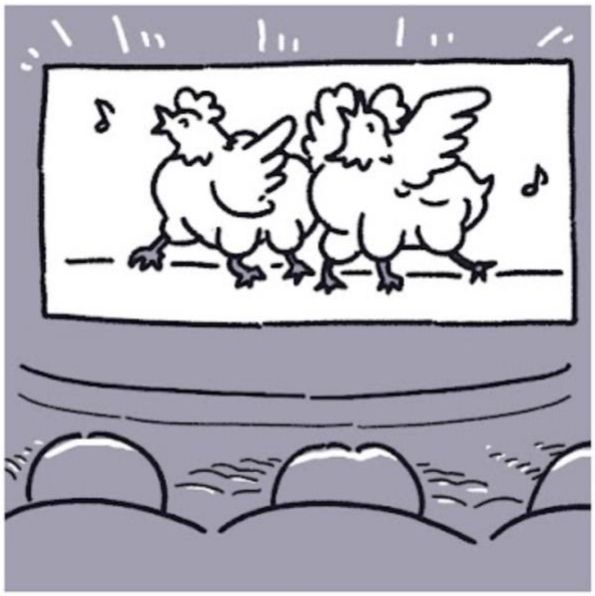
In our zoo, we have two very unusual tigers. Most tigers eat meat all the time. But our two tigers are vegetarian: they love to eat carrots, and they hate meat.

The tigers like carrots. *

○ o

○ x

Last night, I saw a movie about two very strange chickens. They have three legs, instead of two! That's so weird. Everyone knows that a chicken normally has two legs!



Chickens have three legs. *

- ○ O
- ○ X

All in all, total 16 test items were included in the English TVJT experiment, with eight stories appearing with two different target sentences. In addition, 16 filler items were included in the test material, with stories describing an unusual characteristics of a person or an object, in line with the test items. The

test sentences of the filler items, however, had proper nouns, pronouns, or DPs with possessive proper nouns in the subject position for them to distract the participants' attention from the presence versus absence of articles.

As for the L3 participants, they also completed Spanish TVJT, which closely followed that of Ionin et al. (2013). The Spanish TVJT, however, was set up somewhat differentially from the English version, due to ungrammaticality of Spanish bare plurals in preverbal positions. The target sentences could not be set up as in the examples (15) and (16) of the English version, because ungrammatical sentences cannot be judged as true or false in the first place. Therefore, after the story which juxtaposed a specific reading with a generic reading (translated from the English TVJT), the following test sentences only contained definite plurals with their appearing twice: once designed to have a target truth-value "TRUE" on a specific reading (and therefore, false with the generic reading) and once "FALSE" on the specific reading (and therefore, true with the generic reading). The target truth-values were counterbalanced across items. The following examples (17) and (18) illustrate how the English and Spanish TVJT were set up, with the Spanish version having been translated from the English one.

(17) Sample test story: English study

Everyone knows that a zebra always has stripes. But not in our zoo! Our zoo has two zebras, and they are really unusual: they have spots instead of stripes! That's really strange.

a. Zebras have stripes. TRUE

b. The zebras have spots. TRUE

(adapted from Ionin et al., 2013, pp. 494-495)

(18) Sample test story: Spanish study

El zoológico de Buenos Aires tiene dos cebras nuevas. Estas cebras no son comunes: tienen manchas en vez de rayas. ¡Son muy extrañas!

a. Las cebras tienen rayas. [The zebras have stripes.] TRUE generic, FALSE specific

b. Las cebras tienen manchas. [The zebras have spots.] FALSE generic, TRUE specific

(adapted from Ionin et al., 2013, p. 495)

The Spanish TVJT was presented to the participants in an identical manner with the English one in Figure 3.1. Total 32 items, comprised of 16 test items with Spanish definite plurals appearing twice for 8 stories combined with 16 filler items were presented to the L3 participants. One thing that has been noted in Ionin et al. (2013) is that with Spanish definite plurals allowing both specific and

generic readings, the experimental design of the Spanish TVJT allows us to see only the preferences by which the definite plurals are interpreted, not the absolute judgments of definite plurals in generic versus specific contexts. Together with the fact that the Spanish TVJT cannot provide us with judgments on Spanish bare plurals, ungrammatical in the preverbal position, the present study adopted a separate measure that can reveal absolute judgments of both English and Spanish bare and definite plurals in generic versus specific contexts, following Ionin et al.. English and Spanish AJT, with their purpose of probing the L2 and L3 participants' absolute judgments of bare and definite plurals in generic versus specific contexts, will be described in detail in the following section.

3.2.2 English and Spanish Acceptability Judgment Task (AJT)

With the noted limitations of the Spanish TVJT, the present study additionally adopted English and Spanish AJT, both of which were closely adapted from Ionin et al. (2013). The English AJT had its purpose of examining both L2 and L3 participants' metalinguistic judgments of English bare and definite plurals used in generic versus specific contexts (see Appendix 2 for the experimental sentences). On the other hand, the Spanish AJT, with its revealing the L3 participants' absolute judgments on ungrammaticality of preverbal bare plurals in Spanish and grammaticality of definite plurals in both specific and generic

contexts, was used as the measure of L3 knowledge pertaining to Spanish bare and definite plurals.

The test items proceeded as the following: the participants were instructed to rate five different test sentences using the scale of 1 (*unacceptable*) to 4 (*acceptable*) after reading a paragraph-long story. Instructions clearly informed the participants that two or more sentences can be equally rated, as well as that responses to the five different sentences are not ranked. Through the use of such rating scale, absolute judgments to the point of subtle distinctions could be revealed as to how both L2 and L3 participants rated English and Spanish bare and definite plurals used in generic versus specific contexts. Specific-plural contexts and generic contexts are the two relevant contexts for identifying the interpretation of definite versus bare plurals in both English and Spanish, and 4 items per category were included as the test items. The following examples (19-22) adapted from Ionin et al. (2013) illustrate how the English and Spanish AJT have been set up, with the Spanish version translated from the English one.

(19) *Specific-plural category (English).* My friend Gilbert bought some furniture for his kitchen: two chairs and one table. Gilbert likes colorful furniture: for instance . . .

a. Chairs are bright orange.	1	2	3	4
b. The chairs are bright orange.	1	2	3	4
c. A chair is bright orange.	1	2	3	4

d. Chair is bright orange. 1 2 3 4

e. The chair is bright orange. 1 2 3 4

(adapted from Ionin et al., 2013, p. 506)

(20) *Specific-plural category (Spanish).* Mi amigo Miguel compró muebles para su cocina: dos sillas y una mesa. A Miguel les gustan los muebles coloridos: por ejemplo…

a. Sillas son naranja brilliante. 1 2 3 4

b. Las sillas son naranja brilliante. 1 2 3 4

c. Una silla es naranja brilliante. 1 2 3 4

d. Silla es naranja brilliante. 1 2 3 4

e. La silla es naranja brilliante. 1 2 3 4

(adapted from Ionin et al., 2013, p. 506)

The specific-plural category above had its purpose of testing whether the participants had specific interpretation available to English and Spanish bare versus definite plurals. Therefore, the stories in this category described unusual/noncharacteristic properties of the individual(s) under discussion (e.g., bright orange chairs) to ensure that only specific readings are available to the continuation sentence (e.g., *the chairs are bright orange*). Between the two relevant continuations with bare and definite plural subjects, (a) and (b), both English and Spanish has its target sentence with a definite plural NP subject, with

only definite plurals (contra bare plurals) having specific readings in English and with Spanish definite plurals having both generic and specific readings available; note again that bare plurals in the preverbal subject position are ungrammatical in Spanish. The target sentence continuations were highlighted for explanatory purposes here, not in the actual experimental items.

(21) *Generic category (English).* It's my niece's birthday this Saturday – she is going to be three years old. I'm not sure what to get her. Maybe I'll just get her some toy, like a stuffed dog or bear. I can't go wrong with that. We all know that . . .

a. The toy animal is a good children's gift. 1 2 3 4

b. Toy animal is a good children's gift. 1 2 3 4

c. A toy animal is a good children's gift. 1 2 3 4

d. Toy animals are good children's gifts. 1 2 3 4

e. The toy animals are good children's gifts. 1 2 3 4

(adapted from Ionin et al., 2013, p. 506)

(22) *Generic category (Spanish).* El cumpleaños de mi sobrina es este sábado. No estoy segura de qué regarlarle, quizá un juguete, como un oso o un perro de peluche. Eso funcionará porque todos sabemos que:

a. El juguete de animal es un buen regalo para niños. 1 2 3 4

b. Juguete de animal es un buen regalo para niños. 1 2 3 4

c. Un juguete de animal es un buen regalo para niños. 1 2 3 4

d. Juguetes de animales son buenos regalos para niños. 1 2 3 4

e. Los juguetes de animales son buenos regalos para niños. 1 2 3 4

(adapted from Ionin et al., 2013, p. 506)

The generic category, on the other hand, had its purpose of testing whether the participants had generic interpretation available to English and Spanish bare versus definite plurals. The stories of this category were designed to ensure that no specific entities are mentioned under discussion. Therefore, between the two relevant continuations with bare and definite plural subjects, (d) and (e), the target sentence ought to be the generic one that discusses the typical properties of what the subject NP refers to. After all, there is no specific toy animal under discussion in the above example, with toy animals being typically/usually/as a rule good as children's gifts. The highlighted target sentences (only for explanatory purposes; not in the actual experiment) are reflective of the differences in interpretation of bare and definite plurals in English and Spanish: only bare plural NPs (contra definite plurals) have generic readings available in English; Spanish preverbal bare plural subjects are ungrammatical with definite plurals having both generic and specific readings available.

All in all, for both the English and Spanish AJT, each category of specific-plural and generic category contained 4 items, and as a result, total 8 test items together with 8 fillers items were constructed. The filler items had their sentence

continuations with pronoun and possessive pronoun subjects to distract the participants' attention from the presence or absence of articles. Note also that although only the two sentence continuations with bare and definite plurals are relevant to the present study, five sentence continuations followed (with definite singular, indefinite singular, and bare singular NP subjects added) in the experimental items of the English and Spanish TVJT following previous studies (e.g., Ionin, Montrul, Kim, et al., 2011; Ionin et al., 2013), in order for reliability and comparison purposes. The five sentence continuations with different NPs in the subject position were randomized across test items.

3.2.3 English and Spanish AJT on Overall Knowledge of Articles

A separate measure of English and Spanish AJT was adopted to examine the overall knowledge of articles in the L2 and L3 participants, adapted from Ionin and Montrul (2010). With the measure testing basic familiarity with English and Spanish articles, each item consisted of pairs of sentences (e.g., *Mary has a cat. The cat is named Steve*) on which the participants were to judge the acceptability of the second sentence based on the context of the first sentence, by choosing YES or NO. In case the participants chose NO, they were to provide correction for how the sentence ought to be corrected. Only when the participants provided a target YES answer or a target NO answer with accurate correction were they graded as correct. The following example (23) illustrates the nine test categories of the

English AJT that tested the participants' overall knowledge of articles (see Appendix 3 for full experimental sentences).

(23) **a. Singular, second-mention, *the*:** Mary has a cat. The cat is named Steve.

b. *Singular, second-mention, *a*: Robin owns a dog. A dog is named Rollo.

c. Singular, first-mention, *a*: Sue looked out the window. A lion was standing in her garden.

d. * Singular, second-mention, bare: Louis has a kitten. Kitten is named Sheila.

e. *Singular, first-mention, bare: Tom heard a noise. Cow was standing outside.

f. Plural, second-mention, *the*: Leslie saw two dogs outside. The dogs were barking.

g. *Plural, second-mention, bare: Maria met four squirrels in the park. Squirrels were very cute.

h. Plural, existential reading, bare: Thomas heard a noise outside. Puppies were playing in the garden.

i. Plural, generic reading, bare: Roger's cat doesn't listen to him. Cats are very independent.

(Ionin & Montrul, 2010, pp. 890-891)

Note that the sentences with the target response of "NO" are prefaced by a star and that the subject NPs in the second sentence have been underlined only for explanatory purposes, not in the actual experiment. Total 36 test items, with 4 items per category, together with 36 filler items were included in both the English and Spanish TVJT. Both the L2 and L3 participants were tested on their overall knowledge of English articles; only L3 participants were tested on their overall knowledge of Spanish articles with the AJT that was translated from the English version. English and Spanish diverged in grammaticality in the sole category of (23i), with Spanish bare plurals being ungrammatical in the preverbal position contra English bare plurals.[5]

Based on the English AJT testing the general knowledge of English articles, English article accuracy scores of both the L2 and L3 groups were computed through the grading procedure of Ionin and Montrul (2010). The researchers included only the items of (23a) through (23h) into analysis, and computed this way, the mean article accuracy score for the Korean-English L2 group were 96.22% (*SD* = 5.45%), and the Korean-English L3 group 96.43% (*SD* = 6.10%). As illustrated in Section 3.1, the two groups were shown not to be significantly different ($U = 73$, $p = .586$) in terms of their overall knowledge of articles revealed through the article accuracy score.

[5] Spanish bare plurals used existentially in (23h) were placed in the postverbal position in order to make the subcategory acceptable following Ionin and Montrul (2010).

3.2.4 English and Spanish Proficiency Test

English and Spanish proficiency test have been adapted from Ionin et al. (2013). As for the English proficiency test, a passage of *American Kernel Lessons: Advanced Students' Book* (O'Neill, Cornelius, & Washburn, 1981) has been taken, in which the participants were to fill in the 40 blanks placed at every 7th word of the passage. In order for the test format to be compatible with the Spanish proficiency test, Ionin et al. designed each item to be followed by three choices among which the participants had to choose one appropriate answer in the context (see Appendix 4 for further information). This cloze test was specifically confirmed by Chae and Shin (2015) on its adequacy in measuring English proficiency of the Korean L2 learners of English. Each correct blank was given 1 point, therefore 40 points were the maximum point that a participant could get on the English proficiency test. Computed this way, the L2 group had its mean cloze test score of 34.67 (SD = 2.43), and the L3 group 34.71 (SD = 1.11). As illustrated in Section 3.1, there was no significant difference between the two groups' cloze test scores, U = 90.5, p = .774.

The L3 proficiency test was also adapted from Ionin et al. (2013), which is a written Spanish proficiency test adapted from the Diploma of Spanish as a Foreign Language (DELE from its Spanish acronym) test. Only the Korean-English-Spanish L3 group were subject to this L3 proficiency test, and 30 multiple

choice questions for testing vocabulary as well as 20-item cloze test targeting Spanish verbal conjugations, prepositions, adjectives, and vocabulary were incorporated (see Appendix 5 for further information). The test has been widely used to test Spanish proficiency in previous L2 and L3 acquisition studies (e.g., Cabrelli Amaro, 2017b; Montrul, Foote, & Perpiñán, 2008). With total 50 questions involved and each correct question given 1 point, 50 was the total point possible in this test. According to Ionin et al.'s (2013) criterion, each proficiency group (e.g., low, intermediate, and advanced group) had its respective score range of 0 to 29, 30 to 39, and 40 to 50.

All the Korean-English-Spanish L3 group recruited in the present study had taken at least two courses in Spanish at the university level, with their having learned Spanish for a year in the classroom setting. For the 7 L3 participants included in the data analysis, two subgroups were identified with the criterion of Ionin et al. (2013) regarding their Spanish proficiency. That is, among the 7 participants of the L3 group in the present study, 3 participants were of the low proficiency group score range and 4 of the intermediate group score range. With the group means of 26 (SD = 3) for the low group and 32.75 (SD = 0.96) for the intermediate group, the results of a Mann-Whitney U test demonstrated a statistically significant difference between the two groups (U = 12, p < .05).

3.2.5 Language Background Survey

Finally, a language background survey was also distributed through GoogleForm to inquire about both Korean-English L2 group and Korean-English-Spanish L3 group's L2 experience. The first part of the survey was composed of questions concerning basic information about the participants (e.g., age, gender, and AoA). The latter part was composed of questions pertaining to past and current English experience measured through input and exposure. This measure of input and exposure closely followed that of Kim (2022) that adapted survey questions from Muńoz (2014) and Huang et al. (2020) to be appropriate for the L2 English learners in the Korean context.

Past and current in-class and out-of-class exposure was to be reported by the participants with the time periods subdivided into the following age range: pre-school (0-7), elementary (8-11), middle school (12-15), high school (16-18), and current. As for the out-of-class exposure, answer choices ranging from 0 (never or almost never) to 3 (very frequently) were provided, so that the participants had to choose among the choices of "never or almost never", "sometimes", "often", "very frequently" regarding their out-of-class English input and exposure to English skills of listening, reading, and speaking (see Appendix 6 for further information).

3.3 Task Procedures

All the task procedures were administered online through GoogleForm. The Korean-English L2 participants took part in the following tasks of: an English

TVJT, English AJT on plural NPs and overall knowledge of articles, English proficiency test, and language background survey. The Korean-English-Spanish L3 participants, on the other hand, took part in the tasks of English and Spanish TVJT, English and Spanish AJT on plural NPs and overall knowledge of articles, English and Spanish proficiency test, and language background survey. The participants were required to follow the order in which the links for each test was provided. The test procedure and the order of the tasks followed those of Ionin and Montrul (2010) in that the meaning-focused TVJT preceded the form-focused AJT to ensure that no influence from the AJT focusing on grammaticality affects the TVJT.

For the L2 participants, they were to complete their English tasks in the order of a TVJT, AJT on plural NPs and overall knowledge of articles, English proficiency test, and language background survey. Completion of the tasks took approximately an hour for the L2 group. As for the L3 participants, the tasks were divided into three parts: English tasks in the order of a TVJT, AJT on plural NPs and overall knowledge of articles, and English proficiency test; Spanish tasks in the order of a TVJT, AJT on plural NPs and overall knowledge of articles, and Spanish proficiency test; a language background survey. The order in which the English and Spanish tasks were provided was counterbalanced across participants. Both the L2 and L3 participants were compensated monetarily for their participation.

3.4 Data Analysis

The results of the TVJT and AJT were analyzed statistically using R (R Core Team, 2022). As previously mentioned, out of 46 adults recruited (24 Korean-English L2 learners of advanced L2 proficiency and 22 Korean-English-Spanish L3 learners with equivalent English proficiency), the screening process of confirming target-like acceptance of bare and definite plurals in Spanish AJT led to the exclusion of 15 participants in the L3 group. As a result, 24 L2 participants and 7 L3 participants were subject to data analysis after the screening process.

To identify the effect of L2 AoA on L3 regressive transfer in the L3 participants' interpretation of English bare and definite plurals and further test the DSH, both the English TVJT and AJT results have been examined. As for the English TVJT, mean target response scores for each determiner type of bare and definite plurals were first calculated. The mean scores, in turn, were submitted to a two-way mixed ANOVA, with determiner type (bare vs. definite plurals) as the within-subjects variable and language group (L2 group vs. L3 group) as the between-subjects variable. Next, via Bonferroni post hoc analysis, statistical significance of between and within group comparisons was evaluated.

As for the AJT results, mean acceptability judgement scores in the scale of 1 (*unacceptable*) to 4 (*acceptable*) for each determiner type of bare and definite plurals in generic and specific-plural contexts were calculated. Then, the means were submitted to a three-way mixed ANOVA, with context type (generic vs.

specific-plural) and determiner type (bare vs. definite plurals) as the within-subjects variables and the language group (L2 group vs. L3 group) as the between-subjects variable. Then, statistical significance of between and within group comparisons was evaluated via Bonferonni post hoc analysis. Note that for every statistical analysis, the significance level was set at .05.

The entire data analysis procedures closely followed those of Cabrelli Amaro (2017b) in her testing the DSH that incorporated a comparable number of participants to the present study (i.e., 13 English-Spanish-BP L3 and 7 Spanish-English-BP L3 participants) and also Ionin and Montrul (2010) and Ionin et al. (2013) from which the TVJT and AJT of the present study have been closely adapted, with relevant data transformations if deemed necessary.

CHAPTER 4.

RESULTS AND DISCUSSION

The present chapter reports the results of the experimental studies and discusses the key findings of the present study . Section 4.1 presents the statistical analysis of Korean-English L2 group and Korean-English-Spanish L3 group's English truth-value judgement task (TVJT) results. English TVJT focuses on both the L2 and L3 groups' interpretation of English bare and definite plurals as having generic versus specific readings. Section 4.2 then statistically analyzes the results of the English acceptability judgement task (AJT). English AJT examines both the L2 and L3 groups' absolute judgments of English bare and definite plurals in generic versus specific-plural contexts. Finally, Section 4.3 addresses the central research question of the current study, which is related to how the experimental results support the Differential Stability Hypothesis (DSH) of Cabrelli Amaro (2017b) by discussing the results of English TVJT and AJT each testing the L2 and L3 participants' interpretation and absolute judgments of English bare and definite plurals as having generic versus specific readings.

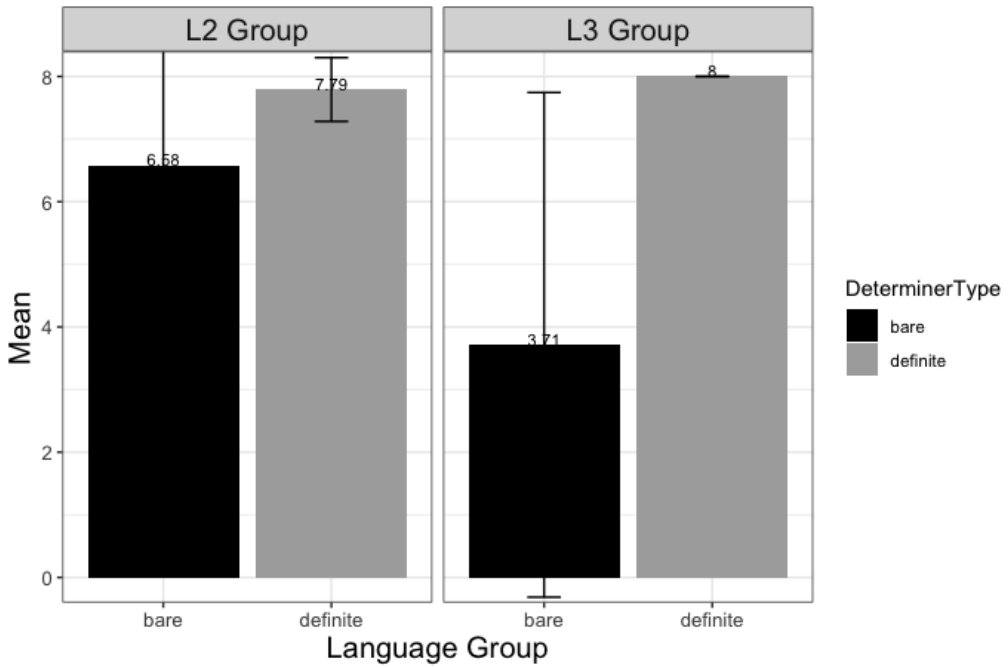
4.1 Group Results of Truth-Value Judgment Task (TVJT)

The first research question examines whether there exist L3 regressive transfer effects for the advanced Korean L2 English learners (with L2 AoA under 12) learning L3 Spanish. The present study adopted two testing measures to probe the question: 1) English TVJT testing the interpretation of English bare and definite plurals as having generic versus specific interpretation; and 2) English AJT testing the absolute judgments of English bare and definite plurals in generic versus specific-plural contexts. The present section reports the group results of the first measure of English TVJT with its aim of identifying how the Korean-English L2 group and the Korean-English-Spanish L3 group interpret English bare and definite plurals.

The following Figure 4.1 illustrates the mean target responses and standard deviations of the L2 and L3 groups in the TVJT. When the participants' responses were coded as 1 point to the correct responses and 0 point for the incorrect ones, the maximum score for each condition of bare and definite plurals was 8.

Figure 4.1

Mean Target Responses on English Bare and Definite Plurals (L2 group vs. L3 group)



Note. Error bars represent standard deviation.

What can be seen through Figure 4.1 is that the Korean-English L2 group were nearly at ceiling in the condition of definite plurals and that the Korean-English-Spanish L3 group were at ceiling in their interpretation of definite plurals. To be specific, the mean target response of the L2 group in the condition of definite plurals was 7.79 (*SD* = 0.51) and the L3 group 8 (*SD* = 0). As for the bare plurals condition, the mean response of the L2 group in the bare plurals condition was 6.58 (*SD* = 2.64) and the L3 group 3.71 (*SD* = 4.03). That is, the L2 group was quite accurate in their interpretation of bare plurals (with over 80% accuracy in

the condition), while the L3 group was less so, with their scoring less than 50% in the condition.

In order to examine how the interpretation of L2 and L3 group differ pertaining to each determiner type, a repeated measures two-way mixed ANOVA was implemented with the within-subjects variable of determiner type (bare vs. definite plurals) and a between-subjects variable of language group (L2 group vs. L3 group).[6] To address the negatively skewed distribution of data, a square-root transformation was applied to the target response data. Visual inspection of the Q-Q plots before and after the transformation provided evidence of improved adherence to normality. The following reports the results of a two-way mixed ANOVA on both the non-transformed and transformed data. Note that the results of the two-way mixed ANOVA analysis on non-transformed and transformed data exhibited only slight discrepancies, primarily observed in the level of effect size, as can be seen from Tables 4.1 and 4.2.

As for the non-transformed data, a main effect for determiner type ($F(1, 29) = 18.575$, $p < .001$, $\eta_p^2 = .390$) and language by determiner interaction ($F(1, 29) = 5.828$, $p < .05$, $\eta_p^2 = .167$) were shown to be statistically significant at the .05 level. (Greenhouse-Geisser sphericity correction was applied to factors that

[6] While Ionin and Montrul (2010) employed a three-way mixed ANOVA with target-truth-value (true vs. false) and determiner type (bare vs. definite plurals) as the within-subjects variables and language group as the between-subjects variable to analyze the TVJT results, the present study opted for a two-way mixed ANOVA. The choice was made because, in the present study, the target-truth-value (true vs. false) did not demonstrate a significant impact on TVJT results when analyzed using a three-way mixed ANOVA.

violated the sphericity assumption.) No other significant main effects nor interactions were found. Table 4.1 is a summary of the results.

Table 4.1

Results of a Repeated Measures Two-way Mixed ANOVA (TVJT, Non-Transformed)

Effect	*DFn*	*DFd*	*F*	*p*	*pes*
Language	1	29	4.105	.052	.124
Determiner	1	29	18.575	.000	.390
Language * Determiner	1	29	5.828	.022	.167

Note. Language is an abbreviation for Language Group and Determiner an abbreviation for Determiner Type

The significant main effect of determiner type indicated significantly better performance on the definite plurals condition when compared with the bare plurals condition. A Bonferroni post hoc analysis on Language * Determiner interaction revealed significant pairwise comparisons from only the bare plurals condition. That is, the L2 group were significantly more accurate in only the bare plurals condition of the TVJT when compared with the L3 group ($p < .05$, $g = .938$), with large effect size measured by Hedges' g (see Appendix 7 for full results).

Similarly, a main effect for determiner type ($F(1, 29) = 18.418$, $p < .001$, $\eta_p^2 = .388$) and language by determiner interaction ($F(1, 29) = 5.592$, $p < .05$, $\eta_p^2 = .162$) were shown to be statistically significant at the .05 level in the transformed

data. (Greenhouse-Geisser sphericity correction was applied to factors that violated the sphericity assumption.) No other significant main effects nor interactions were found. Table 4.2 is a summary of the results.

Table 4.2

Results of a Repeated Measures Two-way Mixed ANOVA (TVJT, Transformed)

Effect	*DFn*	*DFd*	*F*	*p*	*pes*
Language	1	29	3.027	.092	.095
Determiner	1	29	18.418	.000	.388
Language * Determiner	1	29	5.592	.025	.162

Note. The same notes as in Table 4.1

Again, the significant main effect of determiner type indicated significantly better performance on the definite plurals condition when compared with the bare plurals condition. A Bonferroni post hoc analysis on Language * Determiner interaction revealed significant pairwise comparisons from only the bare plurals category: the L2 group were significantly more accurate in only the bare plurals condition of the TVJT when compared with the L3 group ($p < .05$, $g = .875$), with large effect size measured by Hedges' g (see Appendix 8 for full results). All in all, statistical analyses conducted on both non-transformed and

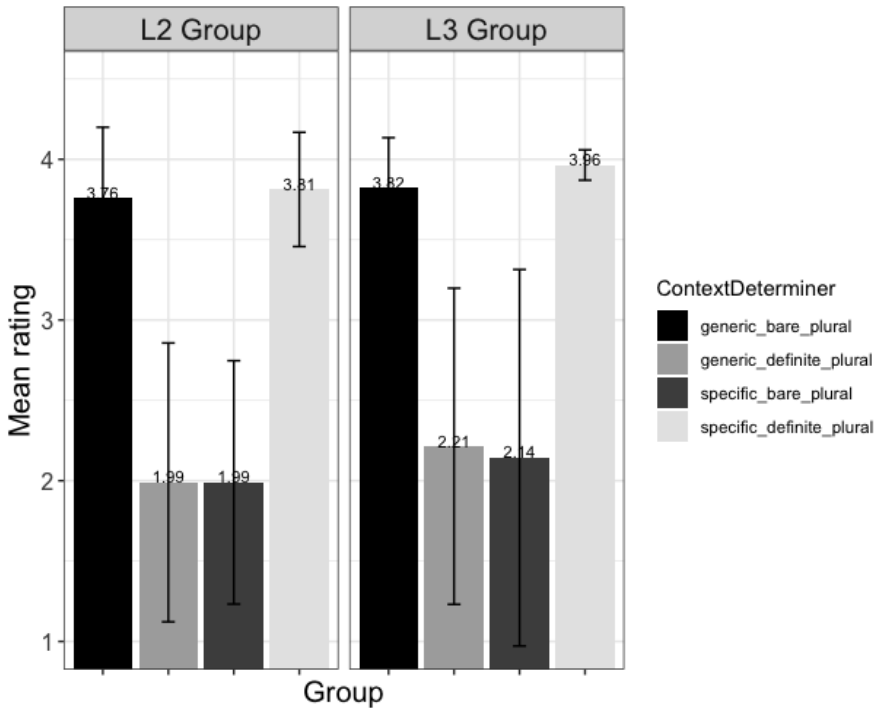
transformed data revealed a significant difference between the L2 and L3 groups in their performance pertaining to only the bare plurals condition of the TVJT.

4.2 Group Results of the Acceptability Judgment Task (AJT)

The present section reports the group results of the English AJT adopted as the second measure in the present study to probe the first research question of whether advanced Korean L2 English learners (with L2 AoA under 12) learning L3 Spanish are subject to L3 regressive transfer. The English AJT had its aim of investigating the absolute judgments of bare and definite plurals in generic versus specific-plural contexts for both the Korean-English L2 group and the Korean-English-Spanish L3 group. As a result, Figure 4.2 illustrates the mean ratings for English bare and definite plurals in the generic and specific-plural contexts. What can be seen from the Figure 4.2 is that both groups of Korean-English L2 group and Korean-English-Spanish L3 group rated bare plurals above definite plurals in generic contexts and definite plurals above bare plurals in specific-plural contexts.

Figure 4.2

Mean Acceptability Judgements of English Bare and Definite Plurals in Generic versus Specific-plural Contexts (L2 group vs. L3 group)



Note. Error bars represent standard deviation; The results represent mean ratings on 1 (*unacceptable*) to 4 (*acceptable*) scale

To be specific, the mean acceptability rating of bare plurals in generic contexts was 3.76 (*SD* = 0.44) for the L2 group and 3.82 (*SD* = 0.31) for the L3 group, whereas bare plurals in specific-plural contexts exhibited mean ratings of 1.99 (*SD* = 0.76) for the L2 group and 2.14 (*SD* = 1.17) for the L3 group. For definite plurals in generic contexts, the mean acceptability ratings for the L2 group were 1.99 (*SD* = 0.87) and for the L3 group were 2.21 (*SD* = 0.98). Definite plurals

in specific-plural contexts, on the other hand, were rated by the L2 group with the mean rating of 3.81 (*SD* = 0.36) and the L3 group with 3.96 (*SD* = 0.09). The results are summarized in the following Table 4.3.

Table 4.3

Mean Acceptability Judgment on English Bare and Definite Plurals in the AJT (L2 group vs. L3 group)

	Context Type	Language Group	*M*	*SD*
Bare Plurals	Generic	L2 Group	3.76	0.44
		L3 Group	3.82	0.31
	Specific-plural	L2 Group	1.99	0.76
		L3 Group	2.21	0.98
Definite Plurals	Generic	L2 Group	1.99	0.87
		L3 Group	2.14	1.17
	Specific-plural	L2 Group	3.81	0.36
		L3 Group	3.96	0.09

Note. The results represent mean ratings on 1 (*unacceptable*) to 4 (*acceptable*) scale

As can be seen from Figure 4.2 and Table 4.3, both participant groups were accurate in their absolute judgments of bare and definite plurals in generic versus specific-plural contexts, so that both groups were target-like in their judging bare plurals above definite plurals in generic contexts and definite plurals above bare plurals in specific-plural contexts.

The mean acceptability judgements of English bare and definite plurals in the generic and specific-plural contexts were then submitted to a repeated measures three-way mixed ANOVA with two within-subjects variables of context type (generic vs. specific-plural) and determiner type (bare vs. definite plurals) and one between-subjects variable of language group (L2 group vs. L3 group). The absence of significant skewness and visual inspection of the Q-Q plot indicated a reasonable assumption of normality for the data under investigation. As a result, a significant determiner by context interaction ($F(1, 29) = 79.029$, $p < .0001$, $\eta_p^2 = .732$) was found. (Greenhouse-Geisser sphericity correction was applied to factors that violated the sphericity assumption.) No other significant main effects nor interactions effects were found. Table 4.4 outlines the results of the three-way mixed ANOVA.

Table 4.4

Results of a Repeated Measures Three-way Mixed ANOVA (AJT)

Effect	*DFn*	*DFd*	*F*	*p*	*pes*
Language	1	29	0.716	.404	.024
Determiner	1	29	0.503	.484	.017
Context	1	29	0.181	.673	.006
Language * Determiner	1	29	0.186	.669	.006
Language * Context	1	29	0.004	.947	.000
Determiner * Context	1	29	79.029	.000	.732
Language * Determiner * Context	1	29	0.044	.836	.002

Note. Language is an abbreviation for Language Group, Determiner an abbreviation for Determiner Type, and Context an abbreviation for Context Type

A Bonferroni post hoc analysis on Determiner * Context interaction revealed significant pairwise comparisons from both determiner types, with a very large effect size as measured by Hedges' *g*. That is, both the Korean-English L2 group and the Korean-English-Spanish L3 group were target-like in their absolute judgements of bare and definite plurals, with their rating bare plurals significantly higher in the generic context type ($p < .0001$, $g = 2.49$) and definite plurals higher in the specific-plural context type ($p < .0001$, $g = 2.60$). The large effect size in both determiner types of bare and definite plurals reflect both L2 and L3 participants' target-like absolute judgments of English bare and definite plurals in generic versus specific contexts (see Appendix 9 for full results).

4.3 Discussion

The central research question that the current study aimed to address was related to how the experimental results support the Differential Stability Hypothesis (DSH) of Cabrelli Amaro (2017b). According to the Differential Stability Hypothesis, language systems are subject to critical period (Lenneberg, 1967) in the morphosyntactic domain so that language acquired before the age 12 versus after the age 12 are differentially affected by the additionally acquired language of L3. The present section addresses this central research question of testing the DSH by referring to the experimental results of the present study. Section 4.3.1 provides an answer to the first research question by discussing the results of English TVJT and AJT each testing the participants' interpretation and absolute judgments of English bare and definite plurals as having generic versus specific readings. Next, Section 4.3.2 gives an answer to the second research question in light of the answer to the first research question and its implications on the DSH.

4.3.1 L3 Regressive Transfer Effects for the Korean-English-Spanish L3 Group

The first research question addressed in the present study was whether the advanced Korean L2 English learners (with L2 AoA under 12) learning L3 Spanish are subject to L3 regressive transfer. To examine the existence of L3 regressive transfer effects, the two groups of Korean-English-Spanish L3 group and Korean-English L2 group were examined in their knowledge of English bare and definite plurals. The two groups were comparable in their L2 language profiles (i.e., L2 AoA, proficiency, amount of L2 experience, article accuracy) to make sure that the only difference between the two groups can be identified as L3 acquisition. Note that all languages of Korean, English, and Spanish bear different interpretation of bare and definite plurals: as for bare plurals, Korean allows both generic and specific interpretation, English allows only generic interpretation, and Spanish bare plurals are ungrammatical in the preverbal position; as for definite plurals, Korean lacks a definite article and definite plurals, English allows only specific interpretation, and Spanish allows both generic and specific interpretation. With the interpretation differences, it was predicted that the L3 learners will exhibit optionality in their interpretation of English bare and definite plurals if they were to exhibit L3 regressive transfer from L3 Spanish.

The DSH posits differential stability for language systems in the morphosyntactic domain acquired before the age 12 versus after the age 12. That is, according to the tenets of the DSH, language stability in the morphosyntactic domain is under the influence of critical period effects (Lenneberg, 1967), with L1 and L2 being fundamentally different in terms of its stability. This leads to the

effect of even native-like L2 being more affected by L3 influence when compared with L1, best exemplified from experimental results of Cabrelli Amaro et al. (2015) in which the English-Spanish-Brazilian Portuguese (BP) L3 group are affected in their knowledge of L2 Spanish TPExp from L3 contra the Spanish-English L2 group that remain unaffected in their L1 Spanish TPExp from L2. Removing in advance the confounding variables (i.e., cumulative influence and cognate languages) noted in Cabrelli Amaro (2017b) for a clearer picture in testing the DSH, the present study focused on the interpretation of English bare and definite plurals in the two participant groups: Korean-English-Spanish L3 learners with advanced L2 proficiency and L2 age of acquisition (AoA) under 12, as well as Korean-English L2 learners with comparable L2 language profiles.

With regards to the first research question, the DSH would predict no L3 regressive transfer effects for the Korean-English-Spanish L3 participants of the present study in their knowledge of English bare and definite plurals. This is because the L3 participants of the present study are of advanced L2 proficiency (CEFR C1 and C2 level) and have acquired their L2 before the age 12. Moreover, the linguistic items of bare and definite plurals have different interpretation in the three languages of Korean, English, and Spanish, thus barring cumulative influence from two of the three languages (noted as a potential confounding variable when testing the DSH in Cabrelli Amaro, 2017b), and none of the three languages are of cognate status (also noted as the potential confounding variable in Cabrelli Amaro). Therefore, the DSH would predict the L3 participants of the

present study to remain unaffected in their interpretation of both English bare and definite plurals just like the Spanish-English L2 group of near-native L2 proficiency in Cabrelli Amaro et al. (2015) who were unaffected in their knowledge of Spanish TPExp.

The present study used two measures to test the knowledge of English bare and definite plurals for the L2 and L3 group. First, a TVJT was used to examine the participants' interpretation of English bare and definite plurals as having generic versus specific readings. Second, an AJT was used to investigate the participants' absolute judgments of English bare and definite plurals in generic versus specific-plural contexts. Both test measures have been closely adapted from Ionin and Montrul (2010) and Ionin et al. (2013) in order to gain reliability and for comparison purposes.

As a result, predictions of the DSH were not met. On the contrary, the results were opposed to what has been predicted from the tenets of the DSH, revealing L3 regressive transfer effects for the Korean-English-Spanish L3 group of advanced L2 proficiency and of L2 AoA below age 12 in the bare plurals condition of the TVJT. When English TVJT results have been scrutinized, both L2 and L3 participants exhibited fully target-like interpretation of definite plurals in the TVJT. However, for the bare plurals condition, although the L2 participants were quite accurate in their interpretation, the L3 participants' TVJT results in the bare plurals condition were significantly less accurate when compared with the L2 participants. That is, the Korean-English-Spanish L3 group exhibited significantly

more optionality in their interpretation of English bare plurals and were more likely to interpret them as having specific readings. This is reflective of L3 regressive transfer effects on the interpretation of English bare plurals for the Korean-English-Spanish L3 group of advanced L2 proficiency and L2 AoA under 12, resulting from their L3 Spanish acquisition of bare and definite plurals.

For the AJT, none of the categories, of bare and definite plurals in generic versus specific-plural contexts, exhibited signs of L3 regressive transfer for the Korean-English-Spanish L3 group. Instead, both groups were target-like in their absolute judgments of English bare and definite plurals in generic versus specific contexts, with their judging bare plurals over definite plurals in generic contexts and definite plurals over bare plurals in specific contexts. No significant difference between the L2 and L3 group in their judgments was found.

To summarize the results of the English TVJT and AJT that each aimed to test the interpretation and absolute judgments of English bare and definite plurals, L3 regressive transfer effects have been found only in the bare plurals condition of the TVJT. Since the TVJT had its purpose of testing the interpretation of bare and definite plurals as having generic versus specific readings, the Korean-English-Spanish L3 group were shown to be negatively affected in their interpretation of English bare plurals as a result of L3 Spanish bare and definite plurals acquisition. Therefore, the answer to the first research question, whether there exist L3 regressive transfer effects for the Korean-English-Spanish L3

learners of advanced L2 proficiency and L2 AoA under 12, is a partial positive, contrary to what has been expected by the tenets of the DSH.

4.3.2 Implications on the Differential Stability Hypothesis (DSH)

The central research question of the present study is to assess the validity of Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b), based on the answer to the first research question: whether there exist L3 regressive transfer effects for the Korean-English-Spanish L3 group of advanced English proficiency (CEFR C1 and C2 level) and of L2 AoA under 12. The answer to the first research question was a partial positive, contrary to the expectations of the DSH. When the Korean-English-Spanish L3 participants and Korean-English L2 participants were examined in their interpretation as well as absolute judgments of English bare and definite plurals as having generic versus definite readings through the TVJT and AJT, L3 regressive transfer effects were found on the L3 group's interpretation of bare plurals in the TVJT. That is, the L3 participants were significantly less accurate in their interpretation of bare plurals in the TVJT when compared with the L2 participants, exhibiting significantly higher propensity to choose the specific reading in interpreting English bare plurals. Therefore, the DSH's claim of L2 AoA threshold of 12 in predicting language stability cannot be fully supported.

As to the reason why the Korean-English-Spanish L3 participants exhibited L3 regressive transfer effects in only the bare plurals condition of the TVJT but not in that of the AJT, Ionin et al.'s (2013) commenting on the differences in the two measures can be referred to. (Note once again that the TVJT and AJT measures of the present study have been closely adapted from Ionin et al..) That is, the researchers observed that the Spanish-English L2 learners of their study are quite accurate in their absolute judgments of English bare plurals over definite plurals in the generic category of the AJT, whereas not being so much accurate in their interpretation of English definite plurals as having specific reference in the TVJT (even for the higher-proficiency learners). Therefore, the researchers discuss that judging (un)grammaticality (measured by AJT) is easier than judging interpretation where both syntax and semantics are called for (measured by TVJT), pointing to how knowledge at the syntax-semantics interface may be harder to acquire than purely syntactic knowledge.

Considering Ionin et al.'s (2013) comments on the differences in types of knowledge measured by the TVJT and the AJT together with the noted asymmetry in the TVJT and AJT results in the present study, knowledge at the syntax-semantics interface may not only be harder to *acquire* than a purely syntactic one, but also more vulnerable to L3 regressive transfer effects when compared with purely syntactic knowledge. That is, with proficiency gains in the L3, knowledge at the syntax-semantics interface may undergo much more pervasive and rapid interference from L3 to L2 when compared with purely syntactic knowledge, as

seen from the Korean-English-Spanish L3 participants of intermediate Spanish proficiency in the present study who exhibited L3 regressive transfer effects only in their interpretation of English bare plurals, but not in their absolute judgments of English bare plurals in generic versus specific contexts.

This postulation is also closely aligned with Cabrelli Amaro's (2017b) associating regressive transfer with language attrition in that they both entail cross-linguistic influence in the direction where the existing language system is influenced by a newly acquired language. That is, based on how Iverson (2012) defined attrition as "the erosion of first language competence after exposure to another language" (p. 7), Cabrelli Amaro operationalizes regressive transfer as the following: "erosion of competence in an existing language after exposure to another language" (p. 3). In light of the analogous nature of regressive transfer and attrition, Cabrelli Amaro highlights that previous studies examining L1 morphosyntactic attrition in the generative framework can be of guide in making predictions concerning regressive transfer, and cites Interface Hypothesis (Sorace, 2011; Sorace & Filiaci, 2006), according to which linguistic domains (whether purely syntactic or in interaction with other linguistic domains) are less susceptible to attrition when compared with domains in interaction with contextual factors (i.e., extralinguistic factors).

She further acknowledges that there does exist controversy over distinguishing external versus internal interfaces together with the fact that a recent study of Sorace (2012) considered Hopp's (2011) assertion that the

probability of feature erosion does not rely on the type of interface, but rather on the computational complexity of a specific structure. Considering the discussion surrounding the types of structure with higher likelihood of feature erosion (in both the case of L1 attrition and L3 regressive transfer), it may indeed be the case that knowledge at the syntax-semantics interface entails more computational complexity than purely syntactic knowledge, thus leading to more pervasive and rapid L3 regressive transfer effects. With the small number of L3 participants in the present study, however, future studies incorporating participants with varying L3 proficiency and/or different linguistic properties internal to a specific domain as well as those at interfaces in testing the DSH may well further corroborate this proposal.

CHAPTER 5.

CONCLUSION

The concluding chapter of this thesis summarizes the major findings of the present study and proposes suggestions for further research. In Section 5.1, the key findings of the study are discussed with their implications on the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b) and the field of L2 and L3 acquisition. Section 5.2 then proposes suggestions for further research and reports the limitations of the study.

5.1 Key Findings and Implications

The central research question of the present study was to investigate the effect of L2 AoA on L3 regressive transfer effects and further test the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017b). According to the DSH, language stability in the morphosyntactic domain is under the influence of critical period effects (operationalized by age 12 following Lenneberg, 1967), so that acquisition of L3 affects L1 and L2 differentially: with the L2 AoA threshold of age 12, language acquired before the age is less susceptible to influence from L3 when compared with language acquired after the age.

The present study, with its aim of identifying the effect of L2 AoA on L3 regressive transfer and further testing the DSH, examined the linguistic items of English bare and definite noun phrases (NPs) with the participants of a Korean-English L2 group and Korean-English-Spanish L3 group. The participants were of comparable L2 language profiles (i.e., L2 AoA, proficiency, amount of L2 experience, article accuracy), with the sole difference of L3 Spanish acquisition experience. Since both participant groups are categorically of advanced L2 English proficiency (CEFR level of C1 and C2) and because they have all acquired their L2 English below the age 12 threshold, the tenets of the DSH expects the Korean-English-Spanish L3 group to remain unaffected in their interpretation of English bare and definite plurals.

The participants' knowledge of English bare and definite plurals was examined through the two experiments of: truth-value judgment task (TVJT) and acceptability judgment task (AJT). English TVJT had its purpose of examining the interpretation of English bare and definite plurals as having generic versus specific readings, and English AJT of examining the absolute judgments of English bare and definite plurals in generic versus specific contexts. The tasks had been closely adapted from Ionin and Montrul (2010) and Ionin et al. (2013) in order to gain reliability and for comparison purposes.

As a result, the Korean-English-Spanish L3 group, contrary to the expectations of the DSH, indeed revealed L3 regressive transfer effects in their interpretation of bare plural NPs: the L3 participant's performance in the bare

plurals condition of the TVJT were significantly less accurate when compared with the Korean-English L2 group of comparable L2 profiles. That is, the L3 participants were significantly more likely to interpret English bare plurals as having non-target-like interpretation of specific readings, when compared with the L2 group.

The Korean-English-Spanish L3 participants of advanced L2 English proficiency and of L2 AoA under 12 exhibiting L3 regressive transfer effects in their interpretation of English bare plurals questions the fundamental tenets of the DSH. That is, the experimental results suggest that the DSH positing L2 AoA threshold of age 12 in predicting language stability cannot be fully supported.

5.2 Limitations and Suggestions

Despite the key findings of the study providing valuable insights into the field of L2 and L3 acquisition, it is not without limitations. First of all, although the present study sought to identify the effect of L2 AoA on L3 regressive transfer and further test the DSH, it is only a partial test of the hypothesis. This is because the DSH seeks to test how the L3 affects L2 versus L1 to a different extent, with the L2 AoA threshold of age 12 following Lenneberg (1967). It would have been a full test of the hypothesis if could recruit participant groups of a Korean-English-Spanish L3 group with L2 AoA under 12 *and* a Korean-English-Spanish L3 group with L2 AoA above 12, but this was near impossible in the setting of the study.

Therefore, future research that seeks to fully test the DSH may well recruit two different L3 groups that differ in L2 AoA: one below the age 12 threshold and the other above the threshold.

Second, although the current study recruited 46 adults in total, of 24 Korean-English L2 learners and 22 Korean-English-Spanish L3 learners at the beginning of the study, only 7 L3 participants were included in the data analysis. While it may be challenging to recruit a large number of participants for L3 studies, future studies testing the DSH with a larger group of L3 participants have the potential to improve the generalizability of the findings and allow for a more robust statistical analysis.

Third, due to the small number of L3 participants in the study, the possibility of a priming effect of the Spanish tasks provided before the English tasks was not adequately accounted for. With the order of the English and Spanish tasks counterbalanced across participants, a majority of participants provided with Spanish tasks first (4 out of 5) exhibited L3 regressive transfer effects in their interpretation of English bare plurals and the ones provided with the English tasks first (2 out of 2) did not. There was, however, the exception of a single participant who did exhibit target-like knowledge pertaining to English bare plurals interpretation despite having been provided with the Spanish tasks first. Therefore, although a definite relationship between the order in which the tasks are provided and L3 regressive transfer effects cannot be concluded, the small number of L3 participants analyzed in the present study prevented us from adequately

accounting for the possibility of priming effects. Future studies with larger sample size of participants may complement the indecisive results pertaining to the possibility of priming effects from the small sample size of the present study.

Finally, the present study was not able to recruit English and Spanish native speakers as the participants due to the limitations in the setting of the study. Instead, it closely adapted testing measures of English and Spanish TVJT and AJT from previous studies that examined cross-linguistic influence on interpretation of bare and definite plurals among the three languages of Korean, English, and Spanish (Ionin & Montrul 2010; Ionin et al., 2013). Such adaptation had its purpose of ensuring test reliability as well as enabling comparison among different participant groups across studies that have adopted the measures. Further studies may well benefit from recruiting the native control groups in its own study and directly comparing the results of the L2 and L3 participants with the native controls data.

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APPENDICES

Appendix 1. Experimental Sentences for the English Truth-Value Judgment Task

1) In our zoo, we have two very unusual tigers. Most tigers eat meat all the time. But our two tigers are vegetarian: They love to eat carrots, and they hate meat.

a) The tigers like carrots. b) Tigers like meat.

2) Last night, I saw a movie about two very strange chickens. They have three legs, instead of two! That's so weird. Everyone knows that a chicken normally has two legs!

a) The chickens have two legs. b) Chickens have three legs.

3) Everyone knows that a zebra always has stripes. But not in our zoo! Our zoo has two zebras, and they are really unusual: they have spots instead of stripes! That's really strange.

a) The zebras have spots. b) Zebras have stripes.

4) Last week, my family adopted two very unusual dogs. They have two noses, instead of one! That's so weird. Everyone knows that a dog normally has one nose!

a) The dogs have one nose. b) Dogs have two noses.

5) In my house, we have two very unusal snakes. Most snakes eat insects all the time. But our two snakes are different: They love to eat apples, and they hate insects.

a) The snakes like apples. b) Snakes like insects.

6) Everyone knows that a giraffe has spots. But not in our zoo! Our zoo has two giraffes, and they are really unusual: they have stripes instead of spots! That's really strange.

a) The giraffes have spots. b) Giraffes have stripes.

7) Yesterday, I saw a musical about two very unusual cats. They have two tails, instead of one! That's so weird. Eveyone knows that a cat normally has one tail.

a) The cats have two tails. b) Cats have one tail.

8) In the aquarium, we have two very unusual octopuses. Most octopuses have eight legs. But our two octopuses have only four legs. That's really strange.

a) The octopuses have eight legs. b) Octopuses have four legs.

Adapted from Ionin and Montrul (2010)

Appendix 2. Experimental Sentences for the English Acceptability Judgment Task

<Specific-plural context>

1) My friend Gilbert bought some furniture for his kitchen: two chairs and one table. Gilbert likes colorful furniture: for instance…

a) A chair is bright orange.
b) Chair is bright orange.
c) The chairs are bright orange.
d) The chair is bright orange.
e) Chairs are bright orange.

2) My family adopted some unusual animals last week: three dogs and one cat. They have strange characteristics: for instance, our cat is very energetic and …

a) A dog has two tails.
b) Dog has two tails.
c) The dogs have two tails.
d) The dog has two tails.
e) Dogs have two tails.

3) Our zoo has very strange animals: one elephant and two squirrels. They have special colors: for instance, our elephant is green, and …

a) A squirrel is white.
b) Squirrel is white.
c) The squirrels are white.
d) The squirrel is white
e) Squirrels are white.

4) My friend Jenny bought new clothes for school: two jackets and one cardigan. Jenny likes unique clothes: for instance…

a) A jacket has spots.
b) Jacket has spots.
c) The jackets have spots.
d) The jacket has spots.
e) Jackets have spots.

<Generic context>

1) My brother is not happy lately because his apartment is very uncomfortable. And his room is very dark. I told him he should buy a new lamp. For example, I know that:

a) A green lamp is very relaxing.
b) Green lamp is very relaxing.
c) The green lamps are very relaxing.
d) The green lamp is very relaxing.
e) Green lamps are very relaxing.

2) It's my niece's birthday this Saturday—she is going to be three years old. I'm not sure what to get her. Maybe I'll just get her some toy, like a stuffed dog or bear. I can't go wrong with that. We all know that:

a) The toy animal is a good children's gift.
b) Toy animal is a good children's gift.
c) A toy animal is a good children's gift.
d) Toy animals are good children's gifts.
e) The toy animals are good children's gifts.

3) My husband and I are looking for a new car. My husband wants a white one, because white is a beautiful color. But I'm worried about theft. I'm worried because:

a) White car attracts attention.
b) A white car attracts attention.
c) White cars attract attention.
d) The white car attracts attention.
e) The white cars attract attention.

4) I want to give my daughter a pet for her birthday; perhaps I will give her a puppy. My daughter is eight, and she is very responsible. This is really important. Everyone knows that:

a) Little puppies need a lot of time and attention.
b) A little puppy needs a lot of time and attention.
c) Little puppy needs a lot of time and attention.
d) The little puppy needs a lot of time and attention.
e) The little puppies need a lot of time and attention.

Adapted from Ionin et al. (2013)

Appendix 3. English Acceptability Judgment Task on Overall Knowledge of Articles

1. 두개의 문장으로 구성된 문항을 읽고, 첫 번째 문장의 맥락에서 두 번째 문장이 문법적으로 적합한지를 판단합니다.
2. 문법적합성 판단은 두 번째 문장에 대해서만 이루어집니다.
3. 문법적으로 적합하지 않은 문장의 경우에 한하여 문법적 적합성을 위해서 어떻게 수정할 것인지까지 적어주세요.

문항예시) I like my brother. She is smart.
응답예시, 문법적으로 적합한 경우) O
응답 예시, 문법적으로 부적합한 경우) X, she->he

1) Mary has a cat. The cat is named Steve.
2) Robin owns a dog. A dog is named Rollo.
3) Sue looked out the window. A lion was standing in her garden.
4) Louis has a kitten. Kitten is named Sheila.
5) Tom heard a noise. Cow was standing outside.
6) Leslie saw two dogs outside. The dogs were barking.
7) Maria met four squirrels in the park. Squirrels were very cute.
8) Thomas heard a noise outside. Puppies were playing in the garden.
9) Roger's cat doesn't listen to him. Cats are very independent.
10) Jenny looked at a cow. The cow was brown.
11) George has a cat. A cat is white.
12) Serena heard a noise. A tiger was standing outside.
13) Dan owns a rabbit. Rabbit is black.
14) Nate looked out the window. Zebra was standing in his garden.
15) Lily met three snakes in the park. The snakes were green.
16) Alice saw five chickens in the zoo. Chickens were very loud.
17) Blair heard something outside. Puppies were barking.
18) Rose's kitten is 0.1kg. Kittens are very small.

19) Allison met a dog in the park. The dog was big.

20) Lisa looks at a puppy. A puppy is small.

21) Georgina looked out the window. A giraffe was running.

22) Kim touches a octopus. Octopus is very smooth.

23) Lee saw a movement. Tiger was looking at him.

24) Jason saw two zebras in the zoo. The zebras were tall.

25) Jim met four cats in the park. Cats were very small.

26) Bart saw something outside. Lions were walking.

27) Logan's cow is 100kg. Cows are very large.

28) Sarah saw a zebra outside. The zebra was tall.

29) Angelina met a chicken in the zoo. A chicken was loud.

30) Gabriel heard a noise. A dog was barking.

31) Gabriella owns a kitten. Kitten is very small.

32) Troy saw something outside. Cat was looking at him.

33) Daniel ate two octopuses. The octopuses were delicious.

34) Ryan has four puppies. Puppies are very cute.

35) Jennifer saw a movement outside. Giraffes were playing in the garden.

36) Jimmy's rabbit moves a lot. Rabbits are very energetic.

Adapted from Ionin and Montrul (2010)

Appendix 4. English Proficiency Test

다음 이야기를 읽고, 빈칸에 들어갈 가장 적합한 단어를 세 개의 선지 중 고르세요. 편의를 위해 한 단락 빈칸 채우기가 끝날 때마다 동일한 지문을 배치하였습니다.

<Cloze Test>

Joe came home from work on Friday. It was payday, but he wasn't (1) _____ excited about it. He knew that (2) _____ he sat down and paid his (3)_____ and set aside money for groceries, (4) _____ for the car, and a small (5) _____in his savings account, there wouldn't be (6) _____much left over for a good (7) _____.

He thought about going out for (8) _____ at his favorite restaurant, but he (9) _____wasn't in the mood. He wandered (10) _____ his apartment and ate a sandwich. (11) _____ a while, he couldn't stop himself (12) _____ worrying about the money situation. Finally, (13) _____ got into his car and started (14) _____. He didn't have a destination in (15) _____, but he knew that he wanted (16) _____ be far away from the city (17) _____ he lived.

He drove into a quiet country (18) _____. The country sights made him feel (19) _____. His mind wandered as he drove (20) _____ small farms and he began to (21) _____ living on his own piece of (22) _____ and becoming self-sufficient. It had always (23) _____ a dream of his, but he (24) _____ never done anything to make it (25) _____ reality. Even as he was thinking, (26) _____logical side was scoffing at his (27) _____ imaginings. He debated the advantages and (28) _____ of living in the country and (29) _____his own food. He imagined his (30) _____ equipped with a solar energy panel (31) _____ the roof to heat the house (32) _____ winter and power a water heater. (33) _____ envisioned fields of vegetables for canning (34) _____ preserving to last through the winter. (35) _____the crops had a good yield, (36) _____ he could sell the surplus and (37) _____ some farming equipment with the extra (38) _____.

Suddenly, Joe stopped thinking and laughed (39) _____ loud, "I'm really going to go (40) _____ with this?"

<Cloze Test Answer Sheet>

1) even more ever
2) then when while
3) checks bills salary
4) driving pay gas
5) deposit withdrawal money
6) quite not too
7) pleasure leisure life
8) eat dinner eating
9) just only very
10) around at in
11) In For After
12) for from about
13) he she it
14) drive driven driving
15) head mind fact
16) be to be being
17) which there where
18) road house air
19) as good better best
20) past in to
21) try think imagine
22) house land farm
23) being been be
24) having have had
25) a one some
26) their his her
27) favorite practical impractical
28) cons disadvantages problems
29) growing breeding building
30) farmhouse truck tractor
31) at out on
32) in for over
33) She He They
34) either and but
35) Whether Even If
36) maybe possible may
37) store save buy
38) economy cost money
39) at out so
40) through away in

Adapted from Ionin et al. (2013)

Appendix 5. Spanish Proficiency Test

스페인어 능숙도 검사는 크게 두 파트로 구성되어 있습니다.

1. 첫 번째 파트는 **스페인어 능숙도 검사 (DELE)**입니다. 각 문장의 빈칸에 들어갈 **가장 알맞은 단어나 구절**을 네 개의 선지 중 고르시면 됩니다.
2. 두 번째 파트는 **빈칸채우기 과업**입니다. **이야기를 읽고, 빈칸에 들어갈 가장 알맞은 단어**를 세 개의 선지 중 고르시면 됩니다.

<Multiple Choice Test>

각 문장의 빈칸에 들어갈 **가장 알맞은 단어나 구절**을 네 개의 선지 중 고르세요. 문항 수는 총 30 개 입니다.

1. Al oír del accidente de su buen amigo, Paco se puso _____.

a. alegre b. fatigado c. hambriento d. desconsolado

2. No puedo comprarlo porque me _____ dinero.

a. falta b. dan c. presta d. regalan

3. Tuvo que guardar cama por estar _____ .

a. enfermo b. vestido c. ocupado d. parado

4. Aquí está tu café, Juanito. No te quemes, que está muy _____.

a. dulce b. amargo c. agrio d. caliente

5. Al romper los anteojos, Juan se asustó porque no podía _____ sin ellos.

a. discurrir b. oír c. ver d. entender

6. ¡Pobrecita! Está resfriada y no puede _____.

a. salir de casa b. recibir cartas c. respirar con pena d. leer las noticias

7. Era una noche oscura sin _____.

a. estrellas b. camas c. lágrimas d. nubes

8. Cuando don Carlos salió de su casa, saludó a un amigo suyo: -Buenos días, _____ .

a. ¿Qué va? b. ¿Cómo es? c. ¿Quién es? d. ¿Qué tal?

9. ¡Qué ruido había con los gritos de los niños y el _____ de los perros!

a. olor b. sueño c. hambre d. ladrar

10. Para saber la hora, don Juan miró el _____.

a. calendario b. bolsillo c. estante d. despertador

11. Yo, que comprendo poco de mecánica, sé que el auto no puede funcionar sin _____.

a. permiso b. comer c. aceite d. bocina

12. Nos dijo mamá que era hora de comer y por eso _____.

a. fuimos a nadar b. tomamos asiento c. comenzamos a fumar d. nos acostamos pronto

13. ¡Cuidado con ese cuchillo o vas a _____ el dedo!

a. cortarte b. torcerte c. comerte d. quemarte

14. Tuvo tanto miedo de caerse que se negó a _____ con nosotros.

a. almorzar b. charlar c. cantar d. patinar

15. Abrió la ventana y miró: en efecto, grandes lenguas de _____ salían llameando de las casas.

a. zorros b. serpientes c. cuero d. fuego

16. Compró ejemplares de todos los diarios pero en vano. No halló _____.

a. los diez centavos b. el periódico perdido c. la noticia que deseaba d. los ejemplos

17. Por varias semanas acudieron colegas del difunto profesor a _____ el dolor de la viuda.

a. aliviar b. dulcificar c. embromar d. estorbar

18. Sus amigos pudieron haberlo salvado pero lo dejaron _____.

a. ganar b. parecer c. perecer d. acabar

19. Al salir de la misa me sentía tan caritativo que no pude menos que _____ mendigo que había allí sentado.

a. pegarle b. darle una limosna c. echar una mirada d. maldecir

20. Al lado de la Plaza de Armas había dos limosneros pidiendo _____.

a. pedazos b. paz c. monedas d. escopetas

21. Siempre maltratado por los niños, el perro no podía acostumbrarse a _____ de sus nuevos amos.

a. las caricias b. los engaños c. las locuras d. los golpes

22. ¿Dónde estará mi cartera? La dejé aquí mismo hace poco y parece que el necio de mi hermano ha vuelto a _____.

a. dejármela b. deshacérmela c. escondérmela d. acabármela

23. Permaneció un gran rato abstraído, los ojos clavados en el fogón y el pensamiento _____.

a. en el bolsillo b. en el fuego c. lleno de alboroto d. Dios sabe dónde

24. En vez de dirigir el tráfico estabas charlando, así que tú mismo _____ del choque.

a. sabes la gravedad b. eres testigo c. tuviste la culpa d. conociste a las víctimas

25. Posee esta tierra un clima tan propio para la agricultura como para _____.

a. la construcción de trampas b. el fomento de motines c. el costo de vida d. la cría de reses

26. Aficionado leal de obras teatrales, Juan se entristeció al saber _____ del gran actor.

a. del fallecimiento b. del éxito c. de la buena suerte d. de la alabanza

27. Se reunieron a menudo para efectuar un tratado pero no pudieron _____.

a. desavenirse b. echarlo a un lado c. rechazarlo d. llevarlo a cabo

28. Se negaron a embarcarse porque tenían miedo de _____.

a. los peces b. los naufragios c. los faros d. las playas

29. La mujer no aprobó el cambió de domicilio pues no le gustaba _____.

a. el callejeo b. el puente c. esa estación d. aquel barrio

30. Era el único que tenía algo que comer pero se negó a _____.

a. hojearlo b. ponérselo c. conservarlo d. repartirlo

<Cloze Test>

다음 이야기를 읽고, 빈칸에 들어갈 가장 적합한 단어를 세 개의 선지 중 고르세요. 편의를 위해 한 단락 빈칸 채우기가 끝날 때마다 동일한 지문을 배치하였습니다.

El sueño de Joan Miró

Hoy se inaugura en Palma de Mallorca la Fundación y Joan Miró, en el mismo lugar en donde el artista vivió sus últimos treinta y cinco años. El sueño de Joan Miró se ha _____(1). Los fondos donados a la ciudad por el pintor y su esposa en 1981 permitieron que el sueño se _____(2); más tarde, en 1986, el Ayuntamiento de Palma de Mallorca decidió _____(3) al arquitecto Rafael Moneo un edificio que _____(4) a la vez como sede de la entidad y como museo moderno. El proyecto ha tenido que _____(5) múltiples obstáculos de carácter administrativo. Miró, coincidiendo _____(6) los deseos de toda su familia, quiso que su obra no quedara expuesta en ampulosos panteones de arte o en _____ (7) de coleccionistas acaudalados; por ello, en 1981, creó la fundación mallorquina. Y cuando estaba _____(8) punto de morir, donó terrenos y edificios, así como las obras de arte que en ellos _____(9).

El edificio que ha construido Rafael Moneo se enmarca en _____(10) se denomina “Territorio Miró”, espacio en el que se han

_____ (11) de situar los distintos edificios que constituyen la herencia del pintor.

El acceso a los mismos quedará _____(12) para evitar el deterioro de las obras. Por otra parte, se _____(13), en los talleres de grabado y litografía, cursos _____(14) las distintas técnicas de estampación. Estos talleres también se cederán periódicamente a distintos artistas contemporáneos, _____(15) se busca que el "Territorio Miró" _____(16) un centro vivo de creación y difusión del arte a todos los _____(17).

La entrada costará 500 pesetas y las previsiones dadas a conocer ayer aspiran _____(18) que el centro acoja a unos 150.000 visitantes al año. Los responsables esperan que la institución funcione a _____(19) rendimiento a principios de la _____(20) semana, si bien el catálogo completo de las obras de la Fundación Pilar y Joan Miró no estará listo hasta dentro de dos años.

<Cloze Test Answer Sheet>

1) a. cumplido b. completado c. terminado
2) a. inició b. iniciara c. iniciaba
3) a. encargar b. pedir c. mandar
4) a. hubiera servido b. haya servido c. sirviera
5) a. superar b. enfrentarse c. acabar
6) a. por b. en c. con
7) a. voluntad b. poder c. favor
8) a. al b. en c. a
9) a. habría b. había c. hubo
10) a. que b. el que c. lo que

11) a. pretendido b. tratado c. intentado

12) a. disminuido b. escaso c. restringido

13) a. darán b. enseñarán c. dirán

14) a. sobre b. en c. para

15) a. ya b. así c. para

16) a. será b. sea c. es

17) a. casos b. aspectos c. niveles

18) a. a b. de c. para

19) a. total b. pleno c. entero

20) a. siguiente b. próxima c. pasada

Adapted from Ionin et al. (2013)

Appendix 6. Language Background Survey

<언어 배경 설문>

본 설문은 여러분의 언어 학습 배경을 알아보기 위해 실시합니다. 문항을 잘 읽고 답하여 주세요. 제한시간은 없습니다.

A. 기본 정보

1. 나이: 만 ___세 (_____년생)

2. 성별: 남 / 여

3. 영어를 언제 배우기 시작했나요? : 만 ___세

4. 영어를 어디에서 배우기 시작했나요?

□ 사교육 기관(영어학원, 영어유치원 등) □ 학교 정규교육 □ 해외 (미국, 영국 등)의 영어 몰입 환경 □ 기타 (_____)

5. 해외 (미국, 영국 등)의 영어 몰입 환경에서 거주한 경험이 있다면 언제부터 거주하기 시작했나요?

: 만 ___세

6. 해외 (미국, 영국 등)의 영어 몰입 환경에서 거주한 경험이 있다면 얼마나 거주했나요?

: ____년 _____개월

7. 당신이 알고 있는 외국어에 대한 공인점수가 있다면 가장 최근에 보았던 시험의 점수를 모두 적어주세요. (예: TOEFL 105, DELE B1)

: _____

B. 과거 영어 학습 경험

8. 각각의 시점에 **일주일에** 평균적으로 얼마나 영어에 노출되었나요?

	0-7세	8-11세	12-15세	16-18세
영어로 된 매체 듣기(영화, 드라마, 노래, 유튜브 등)	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주

영어로 된 글 읽기(책, 잡지, 기사 등)	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주
영어로 대화하기(가족, 친구, 외국인 등)	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주

9. 과거에 일주일에 평균 한 시간 이상 영어로 대화한 사람이 있다면 그 사람이 누구인지, 평균 몇 시간을 대화했는지 적어주세요. ((예) 대상: 미국인 친구 / 평균: 1시간)

□ 없음(10번으로 이동)

□ 있음

- 대상 _____ / 평균 ___시간
- 대상 _____ / 평균 ___시간
- 대상 _____ / 평균 ___시간

C. 현재 영어 사용

10. (교실 내 노출) 현재 **일주일에** 평균적으로 몇 시간 동안 영어에 노출되고 있나요?

	주당학습시간
정규 수업 (대학교, 대학원, 학원 강의 등)	□거의 노출되지 않음 □1시간 미만 □1~1시간59분 □2~2시간59분 □3~3시간59분 □4~4시간59분 □5시간이상(_시간)

11. (교실 외 노출) 현재 **일주일에** 평균적으로 몇 시간 동안 영어에 노출되고 있나요?

영어로 된 매체 듣기 (영화, 드라마, 노래, 유튜브)	영어로 된 글 읽기(책, 잡지, 기사 등	영어로 대화하기(가족, 친구, 외국인 등)
□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주	□거의 노출되지 않음 □가끔 □종종 □매우 자주

12. 현재 일주일에 평균 한 시간 이상 영어로 대화하는 사람이 있다면 그 사람이 누구인지, 평균 몇 시간을 대화했는지 적어 주세요. ((예) 대상: 호주인 친구 / 평균: 1시간)

□ 없음

□ 있음

- 대상: _____ (평균 ___시간)
- 대상: _____ (평균 ___시간)
- 대상: _____ (평균 ___시간)

설문이 종료되었습니다. 참여해주셔서 감사합니다.

Adapted from Kim (2022)

Appendix 7. Bonferroni Post-hoc Analysis for the TVJT Results (Non-transformed)

Determiner	.y.	group1	group2	n1	n2	*p*	*p.signif*	*p.adj*	*p.adj. signif*
Bare	Target	L2	L3	24	7	.032	*	.032	*
Def	Target	L2	L3	24	7	.293	ns	.293	ns

Note. Bare and Def is an abbreviation for Bare Plurals and Definite Plurals; Target is an abbreviation for Target Response (Non-transformed)

Appendix 8. Bonferroni Post-hoc Analysis for the TVJT Results (Transformed)

Determiner	.y.	group1	group2	n1	n2	*p*	*p.signif*	*p.adj*	*p.adj. signif*
Bare	Target	L2	L3	24	7	.045	*	.045	*
Def	Target	L2	L3	24	7	.283	ns	.283	ns

Note. Bare and Def is an abbreviation for Bare Plurals and Definite Plurals; Target is an abbreviation for Target Response (Transformed)

Appendix 9. Bonferroni Post-hoc Analysis for the AJT Results

Determiner	.y.	group1	group2	n1	n2	statistic	*df*	*p*	*p.adj*	*p.adj. signif*
Bare	Rating	Gen	Spe	31	31	10.3	30	.000	.000	****
Def	Rating	Gen	Spe	31	31	-10.2	30	.000	.000	****

Note. Bare and Def is an abbreviation for Bare Plurals and Definite Plurals; Rating is an abbreviation for Mean Rating; Gen and Spe is an abbreviation for Generic Contexts and Specific-plural Contexts

국 문 초 록

본 연구는 제 2언어 습득 연령이 제 3언어의 역전이 현상에 끼치는 영향을 탐구하기 위해 한국어-영어 제 2언어 학습자 그룹과 한국어-영어-스페인어 제 3언어 학습자 그룹을 대상으로 영어 무표형 복수명사구와 복수 한정명사구 해석 현상을 확인하였으며, 이를 통해 차별적 안정성 가설의 타당성을 검증하고자 하였다.

차별적 안정성 가설에 따르면 모국어와 제 2언어는 안정성에 기본적인 차이가 있어서, 습득 연령이 늦은 제 2언어 시스템은 제 3언어로부터 영향을 받기가 쉽다. 차별적 안정성 가설에서는 12세가 제 2언어 습득 연령의 임계점으로 설정되었고, 12세 이후에 습득된 언어 시스템만이 제 3언어의 영향을 받을 것으로 예상되었다. 따라서 차별적 안정성 가설에 따르면, 본 연구의 영어 능숙도가 높으며 제 2언어인 영어를 12세 이전에 습득한 제 3언어 학습자 그룹은 제 3언어의 역전이 현상을 보이지 않을 것으로 예상된다.

한국어, 영어, 스페인어의 영어 무표형 복수 명사구와 복수 한정 명사구는 차별적 안정성 가설을 검증하기 위한 이상적 사례가 된다. 한국어의 무표형 복수 명사구는 총칭적 지칭과 특정적 지칭을 모두 허용하고, 영어의 무표형 복수 명사구는 총칭적 지칭만 허용하며, 스페인어 무표형 복수 명사구는 주어의 위치에서 문법적으로 허용되지 않는다. 복수 한정명사구의 경우 한국어는 정관사와 복수 한정 명사구가 없고, 영어는 그 해석이 특정적 지칭만을 가지며, 스페인어의 복수 한정 명사구의 해석은 총칭적 지칭과 특정적 지칭을 모두 가진다. 세 언어는 무표형 복수 명사구와 복수 한정 명사구의 해석에 관하여 어느 언어도 동일한 특징을 지니고 있지 않으며 세 언어 중 동족 언어가 없기 때문에 차별적 안정성 가설을 보다 명확하게 검증할 수 있게 하는 이상적 언어 현상과 언어 조합이 된다. 본 연구에서는 제 3언어 학습자 그룹에게서 제 3언어 역전이 현상이 발생한다면, 영어의 무표형 복수 명사구와 복수 한정 명사구의 해석이 부정확해질 것이라고 예측하였다.

이 연구는 한국어-영어 제 2언어 학습자 24명과 한국어-영어-스페인어 제 3언어 학습자 22명을 참가자로 모집했으며, 두 그룹의 학습자들은 모두 높은 영어 능숙도를 가지고 12세 이전에 영어를 습득한 참여자들이다. 그러나 스페인어 무표형 복수 명사구와 복수 한정 명사구를 습득하였는지를 확인하는 과정에서 제 3언어 역전이 현상의 통계적 분석이 가능한 제 3언어 학습자들이 7명밖에 남지 않게 되었다. 24명의 제 2언어

학습자들과 7명의 제 3언어 학습자들은 제 2언어 습득 연령, 능숙도, 제 2언어 경험 시간, 관사 정확도 측면에서 차이가 없었다. 제 2언어 학습자 집단은 영어 무표형 복수 명사구와 복수 한정 명사구의 해석을 확인하는 영어 진위 판단 과제, 영어 무표형 복수 명사구와 복수 한정 명사구의 해석에 대한 절대적 수용성 정도를 확인하는 수용성 판단 과제, 관사에 대한 전반적인 지식을 확인하는 수용성 판단 과제, 영어 능숙도 검사, 그리고 언어 배경 조사에 참여하였다. 제 3언어 학습자 집단은 영어 과업과 스페인어 무표형 복수 명사구와 복수 한정 명사구의 습득을 확인할 수 있도록 스페인어 과업에도 추가적으로 참여하였다.

차별적 안정성 가설의 예상과는 달리, 실험 결과는 한국어-영어-스페인어 제 3언어 학습자 그룹이 영어 무표형 복수 명사구의 해석에서 제 3언어 역전이 현상을 보이는 것을 확인하였다. 제 3언어 학습자들은 영어 진위판단 과제에서의 영어 무표형 복수 명사구를 해석하는 데에 있어서 정확도가 제 2언어 학습자 집단에 비해 유의하게 낮았다. 이 결과는 12세의 제 2언어 습득 연령을 기준으로 언어의 안정성의 차이를 주장하는 차별적 안정성 가설을 완전히 지지할 수 없다는 것을 시사한다.

주요어: 제 3언어 역전이 현상, 차별적 안정성 가설, 결정적 시기 가설

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