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# Reverse transfer of L3 on the Interpretation of L2 Reflexives

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English reflexives allow only for short-distance binding except for exempt anaphors, while Chinese and Korean reflexives can be both short- and long-distance bound. This study examines the cross-linguistic influence of L3 Korean on L2 English in the interpretation of reflexive bindings with Chinese and Korean participants. 30 Chinese-English (CE), 20 Korean-English (KE), and 23 Chinese-English-Korean (CEK) participants completed an English proficiency test and a Truth Value Judgment Task (TVJT). The results of proficiency test showed KE scored significantly higher than CE and CEK, while the latter two were comparable. Nevertheless, although the mean scores of TVJT revealed marginally significant variance, Post-hoc comparisons showed KE scored significantly higher than CE, but not than CEK. CEK displayed numerically higher score than CE, though not significantly. The findings mirrored the pattern in Ahn & Jang (2019) in that L3 seemed to play a more robust role in L2 acquisition. The variation in TVJT between CE and CEK was unlikely to be introduced by either L1or L2 proficiency. Aligning with the Foreign Language Effect Model, L2 may be changed to reflect patterns in L3 when a specific feature was not common for both languages.

**Keywords: L3 Acquisition, reverse transfer, reflexive binding**

## Introduction

While studies on progressive (forward) transfer from L1 and/or L2 to L3 have burgeoned over the last two decades, the study of regressive (backward, reverse) transfer is still in its infancy. Nevertheless, the recent growth signals an interest in endeavoring toward a comprehensive understanding of the multifarious processes involved in language acquisition. The value of this new endeavor lies in its potential to address to the long-standing debates concerning the directionality and path of cross-linguistic influence, as well as the differentiating mental constitution of early-acquired L1 and late-acquired L2 language systems.

The current study focuses on reverse transfer of L3 Korean on L2 English by examining crosslinguistic variations in the interpretation of reflexive bindings with Chinese and Korean participants. English, Chinese and Korean differ in the binding domains for antecedents. English reflexive "X-self" allows only for short-distance (SD) binding, but in cases of exempt anaphor, "X-self" can be bound to non-local (LD) antecedents. In Korean, monomorphemic *caki* 'self' and *casin* 'self' can be both short- and long-distance bound, whereas bi-morphemic *caki-casin* 'self-self' is reported to be preferred for local bindings (Kang, 1988). Chinese, like Korean, has both LD reflexive *ziji*, 'self' and SD reflexives (i.e., *ta-ziji*, 'himself'). Therefore, the local domain of English reflexives is smaller and more restrictive than that of both Chinese and Korean reflexives. The present study designs an experiment to testify whether there is backward

transfer of L3 on L2 in the interpretation of bindings of normal and exempt anaphors.

## Literature Review

Research on backward transfer in the field of L3 Acquisition are mainly done in the domains of morphology and phonology. Research on morphosyntactic structures are designated to look for solid evidence supporting the existence of reverse transfer.

Griessler (2001), in a study of comparing the effectiveness different English teaching approaches, finds sound evidence for the existence of positive effects of L3 French acquisition on the proficiency levels of L2 English measured in terms of lexical diversity and verbal morphology. These findings constitute the foundation for experimental research on the bidirectionality of transfer in the field of L3 acquisition.

Hui (2010) employs picture elicitation task with a Cantonese-English-French L3 group and a Cantonese-English L2 group to test if the two groups produce significantly different kinds of relative clause in their L2 English. Both quantitative and qualitative data indicate a clear pattern of L3 influence on L2. Quantitatively, the L3 group employ significantly greater numbers of full subject-extracted relative clause with a relative pronoun as opposed to a reduced relative clause, and is more inclined to insert a relative pronoun. Qualitatively, the L3 group uses the human relative pronoun *who* for non-human antecedents, which is a unique type of error not found in the L2 groups. These results show that backward transfer takes place in the domain of morphosyntactic production.

In a study designed to compare the uses of tense-aspect between a Cantonese-English L2 group and a Cantonese-English-German L3 group, Cheung (2011) finds evidence for backward transfer from L3 German to L2 English in both perception and production data. In particular, the L3 group shows a conspicuously stronger tendency to use the present perfect in their English narratives, and is significantly more inclined to use the English present perfect in denoting past situations without current relevance when compared with the L2 control group. In addition, the L3 group shows a higher ratio in the acceptability of ungrammatical present perfect sentences. The author argues that the backward transfer from L3 German to L2 English can probably be driven by a closer language distance between these two languages, as well as high frequency and recency of use.

Aysan (2012) investigates reverse transfer from different L3s to L2 English pronouns with two L3 groups (L1-Turkish L2-English L3-Italian and L1-Turkish L2- English L3-French) and one L1-Turkish L2-English control group. The three groups are comparable in their English proficiency, and their L3 Italian and French are of the advanced level. The mean scores of the Grammaticality Judgment Task indicates the L3 Italian group scored significantly lower than both the L3 French group and the L2 control group, suggesting a possible effect of L3 Italian on the use of L2 English subject pronouns.

Tsang (2015) in a survey of perceived linguistic distance between L1 Cantonese and L2 English finds that L3 proficiency plays a modulating role. Specifically, the L3-high group is more prone to the linguistic similarities/differences between their L1 and L2, and the greater sensitivity is argued to be attributed to their enhanced cross-linguistic experience.

In another research on the English number agreement among L3 learners, Tsang (2015) finds that there is a possible reverse transfer from L3 French to L2 English among the Cantonese-English-French participants, using a grammaticality judgment-correction task and a free writing task. The production data reveals salient discrepancy between the CE and CEF group, and L3 proficiency plays a modulating role in reverse transfer. In particular, the transfer effect from L3 French to L2 English can only take place when a learner's L3 proficiency has reached a threshold.

In the domain of phonology, a series of studies by Cabrelli Amaro and Rothman have been done to provide further evidence for the existence of backward transfer from L3 to either L1 or L2, and more importantly, to differentiate the magnitude of backward transfer on L1 and L2.

Cabrelli Amaro and Rothman (2010) propose the Phonological Permeability Hypothesis (PPH) in their research focusing on possible differences in the relative stability between pre- and post-pubescent

phonological systems. According to PPH, "Pre- and post-pubescent phonological acquisition is fundamentally different, and this difference is maturationally conditioned in the sense of a critical/sensitive period. Evidence for this should be found in differences in cross-linguistic permeability (regressive interference) between native and non-native phonological systems when an L3/Ln is acquired."

Cabrelli Amaro (2013) explores potential reverse transfer in the domain of phonology with bilingual speakers of English and Spanish learning Brazilian Portuguese (BP) as an L3. The author postulates that the phonological system of a non-primary language acquired after the critical period is less stable, thus is more susceptible to L3 influence, which supports the PPH. The result of a case study of one participant indicates a prompt and permeating L3 influence on the learner's L2 Spanish production.

In a subsequent study, Cabrelli Amaro (2016) enrolls two mirror-image groups (L1-English L2-Spanish and L1-Spanish L2-English) of successive bilinguals in their initial stage of L3 BP acquisition to testify the PPH. Both perception and production data are elicited, and the results show L2 Spanish production data display variation from the L1 Spanish data. The author explains that the addition of the L3 BP phonological system can affect the late-acquired L2 Spanish phonological system in the aspect of speech production.

More recently, Cabrelli Amaro (2016) extends the PPH to the field of morphosyntactic study and proposes the Differential Stability Hypothesis (DSH). She uses mirror-image methodology to differentiate the extent of reverse transfer from L3 to L1 and L2 in the phenomenon of A-movement across a dative experiencer out of a TP complement. The results show that L2 is more susceptible than L1 to the influence of L3, due to the fact that the late-acquired L2 morphosyntactic system is fundamentally different from the early-acquired L1 system with regard to stability. Stability of morphosyntactic systems is conditioned by Age of Acquisition. The late-acquired L2 system is less stable, and hence more permeable to the influence from L3/Ln.

Llinàs-Grau and Mayenco (2016) provide further evidence for a positive effect of regressive transfer from L4 German to L3 English with Catalan-Spanish bilinguals in terms of *that*-deletion in English complement clauses. They employ a written production task to elicit sentences with or without *that* in English. The results show that the Catalan-Spanish-English-German group has a significantly higher percentage of *that*-deletion than the Catalan-Spanish-English group, which is interpreted as an enhancement of the linguistic feature of null-C from L4 German to L3 English.

## Experiments

The present study designs an experiment to testify whether there is backward interlanguage influence of L3 on L2 in the interpretation of bindings of normal and exempt anaphors.

### Participants

Fifty-three native Chinese undergraduates (12 male, 41 female; average age = 19) were recruited and tested in a university in Shandong Province of China. All participants reported starting to learn English in primary school (Average Age of Acquisition = 8.69). None of the participants reported having any experience learning English outside the classroom setting in China. Thirty of them reported having no prior experience with Korean language (CE), and twenty-three were in their first or second year of learning Korean (CEK, average Korean AOA = 18.08). Monetary compensation was paid for their participation upon completion. Twenty native Korean undergraduates were recruited and tested in a university in Seoul, Korea (3 male, 17 female; freshmen). The reported average AOA of English is 8.26. None of them reported having any experience learning English outside the classroom setting in Korea, nor any experience of learning a third language (KE).

## Materials and Procedures

All three groups completed a *Cambridge Quick Placement Test*, a story-based Truth Value Judgment Task (TVJT), as well as a questionnaire on the linguistic background. All tests were off-line and were taken in classroom settings. Instructions in the three tests were provided in English. Participants were asked to complete the items as fast and accurate as possible.

*The Cambridge Quick Placement Test (Version 2)* was adopted to assess the English proficiency of the participants. The test consisted of 60 multiple choice questions to assess reading and grammar, which took approximately 30 minutes to complete. Participants in the present study were placed on the B level (intermediate: 33-50).

The story-based Truth Value Judgment Task was adapted from the one used in Yoshimura et al. (2012). Participants read a short dialogue of 3 to 5 turns between 2 interlocutors first, and were asked to judge if the corresponding sentence was true or false according to what they had just read. Both the narratives and the testing sentences were written in English.

A total of 38 different narratives with different test sentences were presented in printed paper to participants. Prior to the test session, there were 2 practice items. The test session contained 12 fillers and 24 test items, with the testing items being balanced in binding type, finiteness and truth value (See Table 1 for the balancing of test items).

TABLE 1
*The Balancing of Test Items*

| Binding Type | Finiteness | Truth Value | Number |
|---|---|---|---|
| Normal Anaphor (Short Distance Binding) | Finite | True | 3 |
| | | False | 3 |
| | Non-Finite | True | 3 |
| | | False | 3 |
| Exempt Anaphor (Long Distance Binding) | Finite | True | 3 |
| | | False | 3 |
| | Non-Finite | True | 3 |
| | | False | 3 |
| Fillers | | True | 6 |
| | | False | 6 |

The test sentences were designed in such a way that only one interpretation of binding was allowed, and the truth value of the sentence was determined by the narratives (see below for examples).

**Example 1.** *Short-distance, Non-finite, False*

Dave: Could you do me a favor, Ralph?
Ralph: Sure.
Dave: A very important customer is coming tomorrow, so don't forget to contact me if you don't know where you should show him around. O.K.?
Ralph: O.K.

**[Sentence]** Dave advised Ralph to talk to himself. YES NO

**Example 2.** *Long-distance, Finite, True*

Mary: Hi, Sue. I read your boyfriend's poems. They are so beautiful.
Sue: Well, he wrote superb poems, but not a single one dedicated to me.
Mary: He will.

**[Sentence]** Mary believes that Sue's beloved boyfriend will write a poem dedicated to herself.
YES NO

The sequential order of the 36 items in the test session was randomized into 10 different versions (Test Paper 1-10), and the participant got one of the test papers randomly. Participants accomplished the same two practice items before they continued to do the test session.

Upon the accomplishment of the test session, participants were asked to complete a questionnaire on their linguistic background.

## Results

The present study intends to explore the possible influence of crosslinguistic variance on the interpretation reflexive bindings in English as an L2, thus general L2 knowledge might play a role in it. The scores of the *Cambridge Quick Placement Test (Version 2)*, which targeted specifically at grammar and reading ability, were taken as a matrix of participants' L2-English proficiency.

One-way ANOVA with Group as the independent variable and L2-Score as the dependent variable was used in analyzing group variance in English proficiency scores. There were altogether six missing values (three in CE and three in KE). The results revealed significant variance in the mean scores between the three groups, namely, CE, CEK, and KE ($F(2, 64) = 12.514$, $p < .05$, $\eta_p^2 = .281$). Post-hoc analyses using LSD indicated that the mean score of KE was statistically higher than both CE ($p < .05$) and CEK ($p < .05$), but there was no significant difference between CE and CEK (Figure 1).

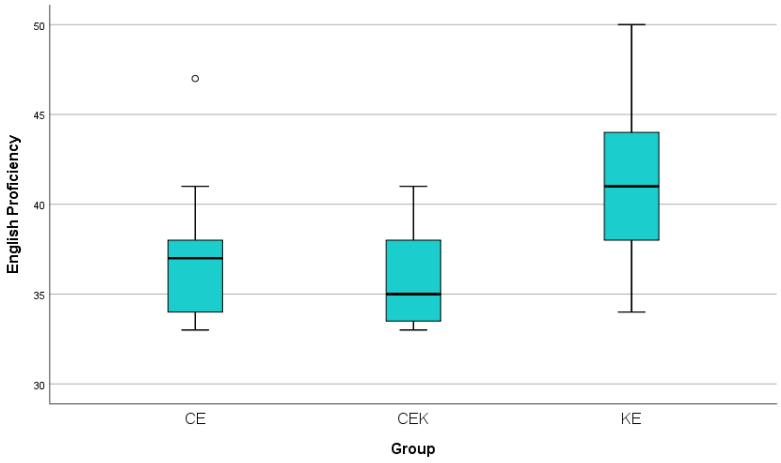


*Figure 1*. Results for mean scores of English proficiency.

An analysis of variance (ANOVA) on the accuracy rate in the TVJT yielded marginally significant variation among groups ($F(2, 70) = 2.977$, $p = .057$, $\eta_p^2 = .078$). The post hoc LSD test revealed a different pattern in group variance. Similar to the significant difference in the mean scores of English proficiencies, KE again was significantly different from CE, being more accurate in their reflexive binding test ($p < .05$). In contrast, CEK was not significantly different from the other two groups, lying somewhere in the middle (Figure 2).

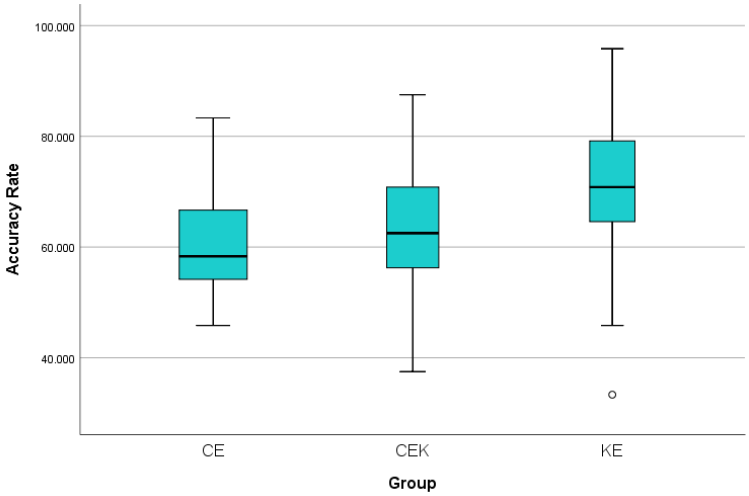


*Figure 2.* Results for mean scores of TVJT.

Paired-samples t-tests were conducted to explore whether there were within-group differences between the accuracy rate of normal and exempt anaphor bindings in True condition. The results showed within KE, the difference in the accuracy rates between normal (SD) (M = 84.67, SD = 14.72) and exempt (LD) (M = 70.00, SD = 25.71) anaphor binding was significantly different ($t(19) = 2.247$, $p = .037$). CEK displayed marginally significant higher accuracy rate in SD (M = 70.30, SD = 21.88) than in LD (M = 60.14, SD = 20.56) condition ($t(22) = 1.948$, $p = .064$). CE's did not yield significance in the comparison of accuracy rate between SD (M = 68.33, SD = 20.22) and LD (M = 62.89, SD = 16.86) conditions ($t(29) = 1.095$, $p = .283$).

Taken the results of the three analyses together, a remarkable variation in the performance of CEK in their Proficiency test and the TVJT was insightful. KE prevailed CE and CEK, while the latter two were comparable in their English proficiency scores. Nevertheless, there was conspicuous difference in the performance of CEK in the proficiency test and the TVJT. In spite of the statistically lower scores in their English proficiency, CEK was not significantly different from KE in their TVJT scores ($p > .05$). Furthermore, CEK had numerically lower English proficiency scores than CE, whereas CEK displayed a notable trend towards higher accuracy rate than CE ($p > .05$) in TVJT, though both differences did not reach significant levels. When the accuracy rates in the two binding conditions within each group were compared, KE was found to be significantly more accurate in SD than in LD condition. CEK patterned similarly to KE, though the discrepancy was not large enough to be statistically significant. Different from the former two groups, CE only showed slightly better performance in SD condition, and the improvement was not statistically meaningful.

## Discussion

Situated in the context of third language acquisition, the current study sought to shed light on cross-linguistic influence by focusing on reverse transfer from L3 to L2 in the case of L2 reflexive binding interpretation. Using two analyses of variance across groups, and paired-samples t-tests between two binding conditions within each group, the current study led to two broad conclusions regarding the interpretation of L2 English reflexive binding. First, L2 proficiency was less likely to play a decisive role in the interpretation of binding domains of English reflexives. Secondly, there was supportive evidence for L3 reverse transfer on L2 reflexive binding interpretation.

The first conclusion was based on the fact that KE (M = 40.88, SD = 4.794) scored significantly higher than CEK (M = 35.70, SD = 2.601) in the general English proficiency test. However, regardless of the overall higher proficiency, KE (M = 70.63, SD = 15.203) was not proved to be more capable of

interpreting the English reflexive bindings than CEK (M = 64.67, SD = 12.041). A look at the comparison between KE and CE in the two tests revealed a different picture, in which KE was on a higher proficiency level than CE (M = 36.48, SD = 3.030), and more accurate than the latter (M = 61.94, SD = 10.422) in TVJT. Both differences were statistically significant. It was unlikely that the substantial improvement of CEK in TVJT was introduced by L1, since CE and CEK were all native Chinese undergraduates, and reported Mandarin as their native language. Nor was it likely to be attributed to variation in English proficiency, since CE and CEK were of intermediate level, with no significant difference in the mean scores of proficiency test. The lack of evidence for a decisive role of proficiency in the interpretation of reflexive bindings echoed Hirakawa (1990), who conducted antecedent identification tasks with L1-Japanese L2-English learners of four grades, and didn't detect supportive evidence for significant improvement across different grade levels. The author speculated that the lack of significant difference across presumed different proficient levels was probably due to the relative low proficiency and inadequate exposure to the target language.

CE and CEK were of the same L1 background, and were comparable in their L2 proficiency. The only difference between them was either with or without the experience of learning a third language. In an attempt to explain the comparatively better judgment of the binding domains of reflexives on the part of CEK, we argued that there was reverse transfer from L3 to L2, and the transfer was positive in terms of the interpretation of reflexive bindings. This finding mirrored the pattern in Ahn & Jang (2019). In their study on the interpretation of definite plural NPs, Ahn & Jang found robust evidence of backward transfer from L3 French, L3 Chinese, and L3 Korean on L2 English, and concluded that for multilinguals, L3 transfer trumped any other sources of transfer in their L2 acquisition, which supported *Foreign Language Effect Model*[1].

Moreover, in addition to an improvement in the general accuracy in TVJT, CEK displayed an imbalance in the accuracy between SD binding and LD binding, though the discrepancy between the two binding conditions was only marginally significant. Considering KE's significant imbalance and a lack of such imbalance with CE, we could say CEK patterned more like KE but not CE in their interpretation of reflexive binding. This finding aligned with both *Foreign Language Effect Model* and *Cumulative Enhance Model*[2]. According to Foreign Language Effect Model, L3 rather than L1 would have a more substantial influence on L2. More importantly, as Hui (2010) and Aysan (2012) proposed, if a specific feature of the L2 and L3 was not common for both languages, the L2 might be changed to reflect patterns in the L3.

However, the better performance of CEK in the TVJT could also be interpreted as their enhanced metalinguistic knowledge on reflexive bindings as a result of acquiring Korean as a third language, which may indirectly support the framework of *Cumulative Enhance Model*. Jessner (2006), in an exploration into the interaction between metalinguistic awareness and cross-linguistic influence in the context of multilingualism, suggested that the learning of additional languages beyond the L1 led to increased levels of metalinguistic awareness, and that this in turn led to accelerated rates of acquisition for subsequent languages. Moreover, Tsang (2015) in a survey of perceived linguistic distance between L1 Cantonese and L2 English found that the L3-high groups scored significantly lower than the L3-mediate and L3-low groups, and the L2 groups as well. Furthermore, the L3-high group provided the most specific comments in a following open-up question on the similarities between English and Cantonese. Combined together, these results indicated that the L3-high group was more prone to the linguistic similarities/differences between their L1 and L2, and the greater sensitivity was attributed to their enhanced cross-linguistic experience.

[1] *Foreign Language Effect*, also known as L2/L3 Status Factor, posits that the non L1-system, being L2 or L3, will always be the prominent source of the transfer (Bardel & Falk, 2007).

[2] *Cumulative Enhance Model* pertains that both the L1 and the L2/L3 can potentially have a positive influence on L3/L2 (Flynn, Foley, & Vinnitskaya, 2004).

## Conclusion

Despite the endeavor in shedding light on the understanding of backward transfer in the field of L3 acquisition, the current study left a couple of questions unresolved. First, supportive evidence for backward transfer has been found regarding the interpretation of domains of reflexive bindings, but the factors which contribute to a higher accuracy remain unclear. Further studies should design in such ways to explore potential factors that might be involved in predicting accuracy in binding test. Secondly, the role of general proficiency in the interpretation of reflexive bindings needs to be clarified. For a better understanding, future studies should enroll participants of different proficiency levels within each language group, and make direct comparisons within and across language groups. Last but not least, the findings of the current study could be understood under the framework of both *the Foreign Language Effect Model* and *the Cumulative Enhance Model,* thus leaving the task of teasing these two models apart in case of reverse transfer for future studies.

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