

Translation Asymmetry in Korean Middle School Students Learning English *

Jung Hyun Lim
(Konkuk University)

Lim, Jung Hyun. (2015). Translation Asymmetry in Korean Middle School Students Learning English. *Language Research*, 51.2, 361-381.

This study examines the questions of (a) how the beginning English level of Korean middle school students make use of lexical and conceptual memory in translation and (b) whether the processing and representations involved in both directions are predicted by the revised hierarchical model (RHM), one of the influential models in L2 and bilingual lexical processing. Through a text-translation task and a word recognition task, the results supported the claims of the RHM, demonstrating that the young participants yielded more errors in the L1 to L2 translation than the reverse, and that they were more likely to mistakenly choose synonymous words when they translated from L1 to L2. The findings suggest that the beginning L2 learners are more likely to be semantically and conceptually involved in the L1-L2 translation than in the reverse direction, consistent with the asymmetrical aspect of the RHM.

Keywords: L2 lexical and conceptual representation, text translation task, revised hierarchical model (RHM), asymmetric processing, beginning L2 learners

1. Introduction

In language learning, lexicon is considered to be the most important component for many reasons. Lexical errors are reported to be the most serious and common among second language (L2) learners (Politzer 1978). Many studies also found that the lexical errors are more common than the grammatical errors recognized by both learners and teachers or researchers (Meara 1984; Lyster 1998; Ellis, Basturkmen, & Loewen 2001). Furthermore, many linguistic theories consider the internal lexicon as

* This work was supported by the KU Research Professor Program of Konkuk University.

a central part in language learning, maintaining that the lexicon is a starting point for language production (Levelt 1989). When it comes to L2 learning, the lexicon is even more important and more complicated since L2 speakers need to deal with two languages. Over the past decades, researchers have showed great interests on the issues of whether and how people with two languages store and access to two lexicons, and how the two lexicons are represented in the memory of L2 speakers and bilinguals. Amongst the previous psycholinguistic models to explain L2 speakers or bilingual language representation, the revised hierarchical model (RHM) proposed by Kroll and Stewart in 1994 has been of a great influence in the literature of L2 and bilingual language processing. Although there exist slight differences across the models, such as the word association model and the concept mediation model, there is an agreement upon the assumption that bilingual linguistic system has a single space for meanings or concepts and two separate spaces for each language lexicon. One of the main assumptions of the RHM is that the links of the three stores, that is, L1 lexicon, L2 lexicon, and concept, are connected each other with a different strength depending on the translation direction. Specifically, it argues that since the L1 lexicon is larger and is strongly linked with concepts than the L2 lexicon, translating L1 to L2 involves more conceptual processing than the opposite, whereas translating L2 to L1 is more dependent on the lexical link. Furthermore, the RHM posits that L2 speakers get to have a stronger and direct connection between the L2 lexicon and the concept as they develop their proficiency in an L2.

There are numerous studies to examine the various aspects of the model, such as the asymmetrical processing of lexical and conceptual memory and the developmental changes as a function of L2 proficiency (Clenton 2015; Damian, Vigliocco, & Levelt 2001; Kroll & De Groot 1997; Kroll, Micahel, Tokowicz, & Dufour 2002). Although the results relating to the model are inconclusive yet and recently some scrutiny has been raised about the model (for detail reviews, see Brysbaert & Duyck 2010; Kroll, Van Hell, Tokowicz, & Green 2010), the RHM remains as one of the influential and current models of bilingual memory to be tested in language processing.

Interestingly, it is notable that the languages tested are usually typologically closely related, such as Dutch and English, French and English,

or German and French. Not many studies have considered two languages which are typologically distant (cf. see Jiang & Forster 2001 for Chinese-English bilinguals). The orthographical and typological differences between languages might have yielded different results from the previous studies with closely related languages. Also, surprisingly enough, most of the previous studies inspired by the model have conducted with adult L2 speakers or bilinguals. Very few studies have considered children or young learners within this model (cf. Brenders, van Hell, & Dijkstra 2011; Sheng, Bedore, Pena & Fiestas 2013). Young learners are in the development of L2 lexicon, and thus it may provide us important information on the young learners' representations of L1 and L2 and possible implications for pedagogy in the classroom for L2 vocabulary development. Therefore, the present study assesses whether the RHM can account for the young, beginning L2 learners' language representations using a translation task; specifically, whether the asymmetrical processing aspect of the model is borne out by the beginning level of L2 middle school students with two typologically distant languages.

2. Background

In the past several decades, researchers have proposed several theoretical models that provide accounts for L2 or bilingual language representation. Kroll and Stewart (1994) proposed a *revised hierarchical model (RHM)*, stating that L2 speakers/bilinguals have different degrees of access to lexical memory and conceptual memory, depending on their proficiency. Figure 1 below illustrates how the RHM explains the relations between the lexicons of two languages and conceptual memory.

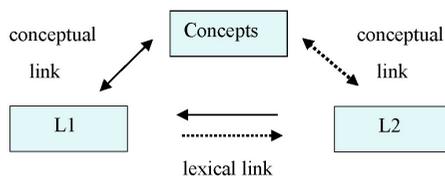


Figure 1. The Revised Hierarchical Model (adapted from Kroll & Stewart 1994).

As shown in Figure 1, the connection between concepts and an L1 is strong whereas the one between concepts and an L2 is relatively weak represented by the dotted line. Accordingly, when translating from L1 to L2, people are assumed to use the conceptual memory to a greater amount than when translating from L2 to L1. Translating from L2 to L1, on the other hand, are more based on direct lexical mapping rather than involving in conceptual activation. In addition, the RHM emphasizes the course of second language development; that is, the link between the conceptual store and the L2 becomes stronger, yielding stronger and direct conceptual mediation through L2 words as L2 proficiency increases.

Since its proposal, many studies have examined the translation symmetry; specifically whether and to what extent the lexical and semantic memory play a role depending on translation direction using various types of tasks, such as word translation, semantic priming, cross-language lexical decision, and naming tasks. Results have yet been mixed. For example, one of the fundamental studies, Kroll and Stewart (1994) reported that highly fluent Dutch (L1) - English (L2) bilinguals generally took more time and were influenced by semantic manipulation only in the L1-L2 direction, indicating the involvement of conceptual processing in the L1-L2 translation but not in the L2-L1 direction. Also, Gollan, Forster, and Frost (1997) found the enhanced cognate effects only with L1 primes but not with L2 primes in Hebrew-English bilinguals, suggesting the asymmetrical priming depending on the direction. On the other hand, there are lines of studies that showed a quite flexible use of lexical and conceptual memory in both L1-L2 and L2-L1 directions. La Heij, Hooglander, Kerling, and Van Der Velden (1996) reported no evidence of the asymmetrical processing between the two directions of translation when the words were preceded by the picture context, pointing out the importance of the presence of the semantic context. More recently, Duyck and Brysbaert (2004) also found that both translation directions yielded semantic effects in a number translation task, indicating the flexible use of both lexical and semantic routes in the two directions of translation.

Furthermore, Hatzidaki and Pothos (2008) examined whether the asymmetrical hypothesis inspired by the RHM can be generalized to a textual level. In three experiments, English-Greek and French-English bilinguals

participated in a text-translation task and a word recognition task. Although the RHM focuses on word translation, since a text reading is a more natural reading behavior than a single word reading, the text translation task was used to test the generalizability of the RHM. In the word recognition task, a set of words including actual, synonyms, and distracters was given to the participants, and asked to choose actual words that they remembered seeing in the text. Because synonyms were supposed to tap onto conceptual processing, the task was a new way of examining to what extent the semantic memory is mediated depending on the translation direction. The study reported more accurate translations and fewer errors in the L2 to L1 direction than in the reverse direction, consistent with the previous studies (De Groot, Dannenburg & Van Hell 1994; Kroll & Stewart 1994) on the single-word level translation. The data from the word recognition task, however, did not support the model's prediction, which expected more semantic errors in the L1 to L2 translation. The participants were not indeed influenced by the synonyms in either directions. The authors provided several possible reasons for the absence of semantic mediation. One important account among them was that highly proficient bilinguals might access both lexical and conceptual links in both directions, so there was not much difference in the results. Since there are studies that show the effect of L2 proficiency in using both lexical and conceptual links regardless of the translation direction (De Groot & Poot 1997; La Heij et al. 1994), L2 proficiency may be a crucial factor. Presumably, as individuals gain proficiency in an L2, they get to have a better ability to engage in conceptual processing through an L2 directly, not through mediation of an L1. Another explanation was that the translation asymmetry observed in the earlier studies (e.g., De Groot et al. 1994; Kroll & Stuart 1994) might have been attributed to the single-word translation in the absence of context, emphasizing the role of the semantic context.

It is noteworthy that all the studies reviewed thus far have examined the populations of fluent adult bilinguals or L2 speakers. Recognizing this limitation on the range of the populations, recently a few researchers have looked at how two languages are represented in children and beginning L2 learners. For instance, Brenders et al. (2011) examined whether

the fifth- (mean age = 10.5 years), seventh- (mean age = 12.6 years), and ninth-grade (mean age = 14.3 years) Dutch students starting to learn English were influenced by L1 and L2 cognates in a word recognition task. Results showed that the young learners were able to process the L2 cognates faster than the noncognates, indicating a language-non-selective lexical access even at the beginning stage of L2 acquisition. The study also found that the beginning L2 learners were more influenced by word form than meaning, which was accounted for by the RHM. More recently, Sheng et al. (2013) tested the developmental aspect and the asymmetric processing aspect of the RHM in Spanish-English bilingual children using a repeated word association task and a translation task. Results revealed that there were patterns of asymmetry in the word association task, and that experience in an L2 played a key role in semantic development, both supporting the claims of the RHM.

In sum, results on the asymmetrical aspect of the RHM are yet inconclusive. As reviewed above, most of the studies have dealt with adult bilinguals and L2 learners. There is still a lack of understanding about young L2 populations. In addition, the languages tested thus far are closely related, such that they share many cognates and histories. The closeness between two languages might have contributed to the certain findings observed in the previous studies relating to the RHM. Thus, orthographically and typologically different languages should also be considered in research to validate the generalizability of the model in the literature of L2 processing and representation. Accordingly, the present paper attempts to fill this gap in the literature, examining the representation of two languages by first-grade middle school students in Korea learning English within the framework of the RHM, largely motivated by the study of Hatzidaki and Pothos (2008). Based on the study and the previous findings, I predict that Korean first-grade middle school students who learns English as an L2 would have more difficulties in translating from Korean (L1) to English (L2) than the reverse. More crucially, it would be expected that there will be a more semantic effect if the L1 to L2 translation is conceptually mediated to a greater extent than the L2 to L1 translation.

3. Method

3.1. Participants

Participants were 24 first-year middle school students at an all-boys middle school located in Seoul, Korea. They received a small lunch box (amounted for 5,000 won (KRW)) for their participation in the experiment. None of them had experiences in studying English in English-speaking countries. Table 1 shows the participants' information including the age of acquisition of English, the duration of learning English (either formally in institutes or informally at home), and the self-report of English proficiency (out of 10) on the four skills- reading, writing, listening, and speaking. As seen in Table 1, the participants seemed to be placed at the beginning level of proficiency in English.

Table 1. Participants' Information Presented in Means (SD in Parentheses)

Age in years	Age of acquisition (in years)	Duration of education (in years)	R	W	L	S
14.5	8.70 (2.62)	5.12 (2.23)	4.12 (1.65)	3.83 (1.49)	3.70 (1.65)	4.00 (1.61)

Note. R = reading, W = writing, L = listening, S = speaking.

3.2. Materials

Part 1. Translation task. Two short passages of 101 (text 1) and 119 (text 2) words in English were chosen from one of the supplementary books designed to enhance English reading skills for middle school students, titled *I love reading: Level 1* (YBM, 2011). The topics for the two texts include the general interests which were relatively easy to read and understand for middle school students. Text 1 is about some facts about a computer keyboard, and Text 2 is about a short description of a chameleon (see Appendix A). Each text has two language versions, one in English and the other in Korean, to be able to make comparisons between L1 to L2 and L2 to L1 translations. Accordingly, there were two lists; one

list consisting of Text A in English and Text B in Korean and the other list with Text A in Korean and Text B in English. Two lists were randomly and evenly distributed to 24 participants.

Part 2. Word recognition task. Motivated by Hatzidaki & Pothos (2008)'s study, the present study also utilized the word recognition task to measure how semantic mediation is occurred in the L1-L2 and the L2-L1 translation by the young language learners. As in Hatzidaki and Pothos (2008), 30 words were included in the task. Ten words were actual words which appeared in the original text. Another 10 words were synonymous words to the word that appeared in the original text. The synonyms were chosen from the website 'www.thesaurus.com' and 'www.synonym.com'. Lastly, another 10 words were distracters which were composed of the words that were generally related to the text, but not present in it. The word lists for Text A and B are presented in Appendix B.

3.3. Procedures

The experiment was run in a quiet classroom in an all-boys middle school located in Seoul under the control of an experimenter and a teacher. Participants were asked to read two passages (one in English and the other in Korean) and to translate them into target languages. The order of the text was dependent on the list each participant received; for example, those who received the List 1 containing the English text first and the Korean text next started from translating English text into Korean first. They were specifically told not to spend too much time on each sentence in order to prevent the possibility of retaining certain information into short-term memory due to the prolonged access to text input. About 20 minutes were allotted for translating the two passages to the participants. After the translation task, the experimenter initiated a small talk for about 5 minutes to divert participants' attentions from the content of the text and to minimize the possibility of memorizing the text information in their short term memory. In the second session, each participant saw two sets of 30 words in the word recognition task, one of which was written in Korean corresponding for the Korean text and the other of

which was written in English for the English text. Participants were told to choose any of the words that they remembered having seen in each text. The recognition task lasted less than 3 minutes.

3.4. Data analysis

The current study was adapted from Hatzidaki and Pothos (2008) with regard to the design and the analysis, thus the evaluation of participants' translation accuracy and errors was based on the measures that the previous study utilized. It should be noted that, however, because there were not many studies using a text translation task from a psycholinguistic approach, it is very careful and hard to say that the measure adopted in this study (and the previous study as well) is the perfect and the only one. Rather, the evaluation tries to best reflect how well the participants comprehended the text and how accurately they were able to translate using a correct grammar and meaning in a target language. Thus, just as in the study of Hatzidaki and Pothos (2008), three textual measures (Georgakopoulou & Goutsos 1999) – meaning, grammar, lexical accuracy- were examined, considering that our participants were L2 learners, not professional translators. *Meaning* refers to how well a general meaning of the sentence of the text is comprehended, *grammar* indicates the extent to which the sentence is grammatically correct in a target language, and *lexical accuracy* shows the correctness of the translated words in a target language. For example, if participant would produce a translation which shows a misunderstanding of the sentence in a to-be-translated language as in translating 'does it look clean?' into '그것을 깨끗이 할 수 있나?,' it would be categorized as a meaning error. An error of grammar would be the case where a participant gives an incorrect use of the syntactic structure in a target language as in '이 문장을 읽어보십시오' into 'now this sentence read'. Finally, participant's lexical mistake, such as not knowing a word or mistranslation of a word as in 'a long, sticky tongue' into '길고 끈은 혀' would be taken as an error of lexical accuracy. In addition to these three measures, when participants did not finish translating a sentence either because of their lack of knowledge or of a time limit; that is, in-

complete translations were considered to be omission. One point was given to each error of the four kinds. To get rid of the subjectivity in evaluating the translations as much as possible, I went through the scoring procedures three times with a careful consideration. For the word recognition task, when participants ticked the words that they thought they had seen in the text, one point was given. Total points for each type are 10 if they would circle all the words.

3.5. Results

Since two different texts were used (although two were considered to be at a similar level and contain the similar numbers of words), I first analyzed the participants' performance in the two texts to see if there were any significant differences that might have occurred due to the text differences, with regards to meaning ($M = 0.75$ for Text 1; $M = 0.83$ for Text 2), grammar ($M = 1.83$ for Text 1; $M = 2.04$ for Text 2), lexical accuracy ($M = 1.75$ for Text 1; $M = 1.54$ for Text 2), and omission ($M = 5.95$ for Text 1; $M = 5.16$ for Text 2). Using paired sample t -tests, all of the categories did not yield any significance ($ps > .05$), providing a statistical validation of using the two texts. Table 2 presents means of errors in the four categories in the translation task for each direction. Table 3 shows the results of paired sample t -tests to compare the participants' performances in the two translation directions.

Table 2. Means of Errors in the Four Categories in the Translation Task (SD in Parentheses)

Errors	N	Translation Direction	
		L1-L2	L2-L1
Meaning	24	0.13 (0.33)	1.46 (2.22)
Grammar	24	3.83 (2.51)	0.04 (0.20)
Lexical accuracy	24	2.17 (1.83)	1.46 (1.88)
Omission	24	7.08 (5.70)	2.92 (4.33)

Table 3. Paired Sample *t*-tests in the Four Categories between Translation Direction

	MSE	<i>t</i> -value	df	<i>p</i>
Meaning	0.48	-2.80	23	.01*
Grammar	0.51	7.48	23	.00*
Lexical accuracy	0.51	1.39	23	.17
Omission	1.58	2.63	23	.02*

Note: $p < .05^*$

As seen in Table 2, except for the errors of meaning, participants seemed to feel more difficulties in the performance of the L1 to L2 translation than the L2 to L1 translation, producing more grammatical and lexical errors. The differences in committing the errors of meaning, grammar, and omission were significant as a function of translation direction. Although there was a trend that the L1 to L2 translation yielded more lexical errors than in the L2 to L1 translation, the difference did not reach at a significance level statistically. Only the errors of meaning showed an opposite pattern with the other three types of errors. The young learners were more likely to misunderstand the meaning of the text in an L2 than in an L1, such that they mistranslated the L2 sentence into the L1.

The performance in the word recognition task was also analyzed to investigate the extent to which lexical and semantic memory are involved in two different translation directions. Table 4 shows the means of scores for each type of words in the word recognition task for two translation directions, and Table 5 presents the results of paired sample *t*-tests in the two translation directions for each word types.

Table 4. Means of Scores for each Type of Words in the Word Recognition Task (SD in Parentheses)

Word Type	N	Translation Direction	
		L1-L2	L2-L1
Original words	24	7.88 (1.51)	7.96 (2.09)
Synonyms	24	1.92 (1.34)	1.17 (1.04)
Distracters	24	0.83 (0.86)	0.38 (0.64)

Table 5. Paired Sample *t*-tests for each Word Type between Translation Direction

Word Type	MSE	<i>t</i> -value	df	<i>p</i>
Original words	0.52	-0.16	23	.87
Synonyms	0.29	2.58	23	.02*
Distracters	0.25	1.85	23	.08 [†]

Note: $p < .05^*$; $p < .10^{\dagger}$

As shown in Table 4, the young L2 participants tended to mistakenly remember synonymous words more in the L1 to L2 translation than in the reverse direction. The numbers of distracters that they thought they saw in the text were also larger in the L1 to L2 translation. The statistical analysis yielded a significant difference in synonyms ($p < .02$), indicating that the words with similar meanings besides the original words were more activated in the young learners' minds in the L1 to L2 translation. The difference in distracters also yielded a marginal significance ($p < .10$), while there was no difference for original words.

4. Discussion

The present study set out to test the revised hierarchical model (RHM, Kroll & Stewart 1994), one of the influential models of bilingual language processing, examining the population of middle school students, someone other than adult L2 speakers. Largely adapted from the study of Hatzidaki and Pothos (2008), a text-translation task and a word recognition task were used to investigate whether semantic and lexical mediation during translation process by Korean middle school students learning English can be accounted for by the model, which are thus far largely based on the adult data with typologically similar languages.

On the basis of the RHM, two predictions were made at the outset. First, based on the series of studies to provide the initial evidence for the model (De Groot et al. 1994; Kroll & Stewart 1994), it was predicted that the middle school L2 learners would produce less accurate and more

errors in the L1 to L2 translation than in the L2 to L1 translation. This prediction was held by the current results. As seen in Table 1 above, except the category 'meaning', the participants displayed more difficulties in translating L1 to L2, confirming the common belief shared by translation theorists and translators that translating one's dominant language into one's L2 is harder than translating L2 into one's dominant language (Olohan, 2004). The 'meaning' category resulted in a different pattern from the other three categories; that is, the young L2 learners produced more sentences with a different meaning from an original sentence when the direction was L2 to L1 than it was L1 to L2. This observation seems to boost the argument that concept mediation is stronger for L1 words. When the participants read the text in Korean (L1), the conceptual representation of Korean sentences appeared to be so clear that the readers were able to translate Korean sentences into English sentences with a correct meaning of the original sentence. On the contrary, as the connection from L2 to L1 was considered to be weaker at the concept level, the young L2 learners produced Korean sentences with a different meaning from the original English sentences. The lack of lexical and syntactic knowledge might also have contributed to the mistranslations, and this seems to be consistent with Brenders et al. (2011) in that beginning L2 learners are more focused on word representation rather than meaning representation in the L2 to L1 translation.

The second prediction was on the asymmetrical involvement of semantic and lexical processing depending on the two translation directions. According to the RHM, the beginning L2 learners were hypothesized to be more engaged in conceptual processing when they translate from L1 to L2 and to more make use of lexical processing when translating from L2 to L1. The word recognition task from the current study attempted to test this prediction, and the results confirmed the prediction supporting for the RHM even in the text translation. The young participants mistakenly checked more synonymous words in the L1 to L2 than the L2 to L1 translation. Although it was marginally significant ($p = .08$), they also activated more distracting words in the L1 to L2 translation direction. The distracters included words that were related to the content of the

whole text, but were not exactly synonymous to the original words (see Appendix B). It seemed that the participants activated over and above what should be activated from the original words, indicating more involvement of conceptual memory in the L1 to L2 translation. This result is noteworthy in that it provides novel data with young, beginning L2 learners who have typologically different languages, to one of the debatable issues of to what extent lexical and semantic routes are mediated in forward (L1 to L2) and backward (L2 to L1) translation directions in the literature of L2 and bilingual lexical processing and representation.

The asymmetrical involvement of conceptual memory in the current study was consistent with the lines of studies that provided the evidence for the RHM. However, this finding was somewhat different from the study of Hatzidaki and Pothos (2008) which was the motivation and the base of the present study. Using the similar method and design, these two studies yielded different results; while the current study found the translation asymmetry, the previous one reported the absence of the semantic effect in both directions. The difference appeared to be originated from the different populations, different materials, and different use of modalities. First, the participants in the current study were first-grade middle school students in Korea learning English as an L2, while the participants in Hatzidaki & Pothos (2008) were fluent Greek-English and French-English adult bilinguals. It might have been that as proficiency increases, the use of both conceptual and lexical memory gets more flexible, and that context effect is only available when L2 proficiency is reached at a certain level. Second, the two studies used different texts to be translated, such that the different results may come from the differences in materials, as several research has already pointed out the different materials as one of the sources of the inconclusive results on the asymmetrical processing in bilingual language use (De Groot 1995; Frenck-Mestres & Prince 1997). Lastly, while Hatzidaki and Pothos used the oral translation task in their experiments, the current study used the written translation task. The reason behind the modality difference is yet to be figured out and thus it requires more future research.

Some might argue that the two main findings in the present study are

more likely to be the results of out of question, because the observations of more errors / difficulties and the greater involvement in conceptual processing in the L1 to L2 translation than the opposite by the beginning L2 learners seem overtly make sense in some senses. However, we should be aware that even if when ideas sound obvious and natural, providing actual empirical data through systematic experiments testing existing models is important in the field of second language acquisition (SLA), because it deals with human behavior and is often inconsistent. The revised hierarchical model (RHM) itself originally was put forth to explain lexical and conceptual connections between L1 and L2 by L2 learners from beginning to highly fluent. It permits various basic predictions relating the asymmetric involvement in conceptual link depending on translation direction and the different performance depending on proficiency. Previous studies that tested the model also found somewhat obvious results in that translation from L1 to L2 was slower, less accurate, and more likely to be influenced by semantic variables (De Groot et al. 1994; Kroll & Stewart 1994; Sholl, Sankaranarayana & Kroll 1995). Although the findings of the present study appears to be quite obvious at the first glimpse just as the previous studies in this line of research, and it only considered one facet of the model, the asymmetrical aspect, the current study is meaningful in that it tested the model including a new population and two languages (i.e., young, beginning L2 speakers with two typologically different languages) that have rarely been considered before. It further makes contributions to the L2 and bilingual processing/representation literature in that the current findings confirmed some of the predictions that the translation from L2 to L1 is in place very early in second language learning and that L1 to L2 should engage conceptual processing which is quite inaccessible to the L2 learners at the early stage of learning. Finally, the study provides several pedagogical factors to language teachers to consider; such as, language teachers can develop effective strategies to teach new L2 vocabulary based on the finding that L2 is not yet strongly connected to concepts, and the observation that L2 is mediated through L1 lexicon in the early stage of L2 acquisition would be worth to keep in mind for teachers in classrooms.

However, despite of its implication and contribution of the study, it also brings up other questions and contains limitations that need to be addressed in the near future. First, as mentioned above, it would be crucial to see the effect of proficiency and eventually the development of language representation by the young language learners in the future studies. The RHM argues that as L2 proficiency increases, L2 learners or bilinguals tend to access to concept via L2 itself rather than L1 mediation. There are lines of studies to show the effect of L2 proficiency in the extent to which L1 is mediated in translation (Fitzpatrick & Izura 2011; Jared & Kroll 2001; Sunderman & Kroll 2006). Investigation of how L2 proficiency affects memory representations by young Korean learners of English will provide valuable information on the development of lexical organization and further may provide pedagogical implications on the better teaching for L2 vocabulary development. Second, both modalities should be utilized using a homogeneous group and be compared to see if there are any effects of modalities on the use of lexical and conceptual memory in a translation task. It will provide novel data and information on how language modality interacts with language development. Last but not least important, just like any other research in SLA and psycholinguistics, it needs more numbers of participants and replications with the similar design and analysis to make robust generalizations about L2 learners' language representation and bilingual lexicon system.

5. Conclusion

The current paper investigated the lexical and conceptual representations with a group of Korean middle school students learning English through text translation and word recognition tasks. The young participants produced more grammatical and lexical errors and more incomplete sentences in the L1 to L2 than in the L2 to L1 translation, being consistent with the prediction of the revised hierarchical model (RHM). Results from the word recognition task also indicated that the L1 to L2 translation requires more conceptual and meaning-based processing than the other

direction. Supporting the RHM, the one of the influential models in bilingual lexical processing, the present study broadens the range of population and languages to be tested. Although the study has several limitations, it has an important implication in that the asymmetrical use of conceptual memory was observed with the young, beginning L2 learners with two typologically different languages even in a text translation; that is, even semantic context did not influence the translation asymmetry at the early stages of acquisition.

References

- Brenders, P., Van Hell, J. G., and Dijkstra, T. (2011). Word recognition in child second language learners: Evidence from cognates and false friends. *Journal of Experimental Child Psychology* 109, 383-396.
- Brybaert, M. and Duyck, W. (2010). Is it time to leave behind the Revised Hierarchical Model of bilingual language processing after fifteen years of service? *Bilingualism: Language and Cognition* 13.3, 359-371.
- Clenton, J. (2015). Testing the revised hierarchical model: Evidence from word associations. *Bilingualism: Language and Cognition* 18.1, 118-125.
- Damian, M. F. and Vigliocco, G., & Levelt, W. J. M. (2001). Effects of semantic context in the naming of pictures and words. *Cognition* 81, B77-B86.
- De Groot, A. M. B. (1995). Determinants of bilingual lexicosemantic organisation. *Computer Assisted Language Learning* 8, 151-181.
- De Groot, A. M. B. and Poot, R. (1997). Word translation at three levels of proficiency in a second language: The ubiquitous involvement of conceptual memory. *Language Learning* 47, 215-264.
- De Groot, A. M. B., Dannenburg, L., and Van Hell, J. G. (1994). Forward and backward word translation by bilinguals. *Journal of Memory and Language* 33, 600-629.
- Duyck, W. and Brybaert, M. (2004). Forward and backward number translation requires conceptual mediation in both balanced and unbalanced bilinguals. *Journal of Experimental Psychology: Human Perception and Performance* 30, 889-906.
- Ellis, Basturkmen and Loewen (2001). Learner uptake in communicative ESL lessons. *Language Learning* 51, 281-318.
- Fitzpatrick, T. and Izura, C. (2011). Word association in L1 and L2: An exploratory study of response types, response times and interlingual mediation.

- Studies in Second Language Acquisition* 33, 373-398.
- Frenck-Mestre, C. and Prince, P. (1997). Second language autonomy. *Journal of Memory and Language* 37, 481-501.
- Georgakopoulou, A. and Goutsos, D. (1999). Text and communication. Athens: Greek Letters.
- Gollan, T., Forster, K. L., and Frost, R. (1997). Translation priming with different scripts: Masked priming with cognates and noncognates in Hebrew-English bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 23, 1122-1139.
- Hatzidaki, A. and Pothos, E. M. (2008). Bilingual language representation and cognitive processes in translation. *Applied Psycholinguistics* 29, 125-150.
- Jared, D. and Korll, J. F. (2001). do bilinguals activate phonological representations in one of both of languages when naming words? *Journal of Memory and Language* 44, 2-31.
- Jiang, N. and Forster, K. I. (2001). Cross-language priming asymmetries in lexical decision and episodic recognition. *Journal of Memory and Language* 44, 32-51.
- Kroll, J. F. and Curley, J. (1988). Lexical memory in novice bilinguals: The role of concepts in retrieving second language words. In M. M. Croneberg, P.E. Morris, & R. N. Sykes (Eds.), *Practical aspects of memory: Current research and issues* (vol. 2, pp. 389-395). London: Wiley.
- Kroll, J. F. and De Groot, A. M. B. (1997). Lexical and conceptual memory in the bilingual: Mapping form to meaning in two languages. In De Groot A. M. B., & Kroll J. F. (Eds.) *Tutorials in bilingualism: Psycholinguistic perspectives*, pp. 201-224. Mahwah, NJ: Lawrence Erlbaum Publishers.
- Kroll, J. F. & Michael, E., Tokowicz, N., and Dufour, R. (2002). The development of lexical fluency in a second language. *Second Language Research* 18.2, 137-171.
- Kroll, J. F. and Stewart, E. (1994). Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations. *Journal of Memory and Language* 33, 149-174.
- Kroll, J. F., Van Hell, J. G., Tokowicz, N., and Green, D. W. (2010). The revised hierarchical model: A critical review and assessment. *Bilingualism: Language and Cognition* 13.3, 373-381.
- La Heij, W., Hooglander, A., Kerling, R., and van der Velden, E. (1996). Nonverbal context effects in forward and backward translation: Evidence for concept mediation. *Journal of Memory and Language* 35, 648-665.
- Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.
- Meara, P. (1984). The study of lexis in interlanguage. In A. Davies, C. Cripser, &

- A. Howatt (Eds.), *Interlanguage*, pp. 225-235. Edinburgh, UK: University of Edinburgh Press.
- Olohan, M. (2004). *Introducing corpora in translation studies*. New York: Routledge.
- Politzer, R. (1978). Errors of English speakers of German as perceived and evaluated by German natives. *The Modern Language Journal* 62, 253-261.
- Scarborough, D. L., Gerard, L., and Cortese, C. (1984). Independence of lexical access in bilingual word recognition. *Journal of Verbal Learning and Verbal Behavior* 23, 84-99.
- Sheng, L., Bedore, L. M., Pena, E. D., and Fiestas, C. (2013). Semantic development in Spanish-English bilingual children: Effects of age and language experience. *Child Development* 84.3, 1034-1045.
- Sholl, A., Sankaranarayana, A., and Kroll, J. F. (1995). Transfer between picture naming and translation: A test of asymmetries in bilingual memory. *Psychological Science* 6.1, 45-49.
- Sunderman, G. and Korll, J. F. (2006). First language activation during second language lexical processing: An investigation of lexical form, meaning, and grammatical class. *Studies in Second Language Acquisition* 28, 387-422.
- Van Hell, J. G. and De Groot, A. M. B. (2008). Sentence context modulates visual word recognition and translation in bilinguals. *Acta Psychologica* 128.3, 431-451.

Jung Hyun Lim

Research Institute for Multilingualism and Multiculturalism

Konkuk University

120 Neungdong-ro, Gwangjin-gu, Seoul

E-mail: junghlim@konkuk.ac.kr

Received: June 30, 2015

Revised version received: August 7 , 2015

Accepted: August 16, 2015

Appendix A. Text A and B for Translation Task

Text A. Chameleons are small reptiles. They look like little dinosaurs. They have unique eyes, colorful skin, and a long, sticky tongue. The chameleon can move each of his eyes separately. Maybe he can even watch two television shows at once. How convenient! Chameleons can change the color of their skin, too. Different skin colors often show different feelings. For example, an angry chameleon will turn bright red. Sometimes the chameleon covers himself with all kinds of beautiful colors. That helps him find a mate! He can be black, green, red, or yellow. What a fashionable pet he is! When a delicious bug walks by, the chameleon can catch it quickly. How? He just uses his long, sticky tongue. It's amazing.

Text A (Korean). 카멜레온은 작은 파충류입니다. 작은 공룡과 같습니다. 카멜레온은 특이한 눈, 화려한 스킨과 길고 끈적한 혀를 가지고 있습니다. 카멜레온은 각각의 눈을 따로 움직일 수 있습니다. 아마도 그는 두 개의 텔레비전을 한 번에 볼 수도 있습니다. 얼마나 편리합니까! 카멜레온은 그들의 피부색도 바꿀 수 있습니다. 다른 스킨 색은 다른 감정을 종종 표현할 수 있습니다. 예를 들면, 화난 카멜레온은 밝은 빨간색으로 변할 것입니다. 때때로 카멜레온은 온갖 아름다운 색깔로 자신을 보호합니다. 이것은 짝을 찾는 데 도움을 줍니다. 카멜레온은 검정색, 초록색, 빨간색, 그리고 노란색이 될 수 있습니다. 얼마나 쾌서너블한 애완동물인가! 맛있는 곤충이 지나가면, 카멜레온은 쥘쥘하게 잡을 수 있습니다. 어떻게? 길고, 끈적한 혀를 사용합니다. 멋진 일이지요.

Text B. Look at your computer keyboard. Does it look clean? Now, read this sentence: Computer keyboards are dirtier than toilets. Does that sound strange? You may not want to believe this, but it's true. A recent study said that the keyboards had more bacteria than toilets and toilet door handles. In fact, they were so dirty that they could make people seriously sick. Why is this? People often forget to wash their hands after using the bathroom. Some people also eat food at their desks. The study said that these are the main reasons for dirty keyboards.

Text B (Korean). 당신의 컴퓨터 키보드를 보십시오. 깨끗해 보입니까? 이제, 이 문장을 읽어보십시오: 컴퓨터 키보드는 화장실보다 더럽다. 이상하게 들립니까? 당신은 아마 믿지 않겠지만, 이것이 사실입니다. 키보드가 화장실과 화장실 문고리보다 박테리아가 더 많다고 최근 연구는 말했습니다. 사실상, 키보드는 너무 더러워서 사람들을 심각하게 아프게 할 수도 있습니다. 왜 그럴까요? 사람들은 종종 화장실을 사용한 후에 손 닦는 것을 잊습니다. 또, 어떤 사람들은 책상에서 음식을 먹습니다. 그 연구는 이것이 키보드가 더러워지는 주 이유라고 말했습니다.

Appendix B. The 30 words for Word Recognition Task

Word list for Text A

black	type	fast	sticky
chameleons	mouth	catch	perhaps
tongue	short	fashionable	yummy
crocodile	various	radio	furious
shiny	long	nose	skin
slippery	uncommon	dinosaurs	blue
bone	snake	feelings	partner
comfortable	animal		

Word list for Text A (Korean)

검정색	유형	빠르게	끈적한
카멜레온	입	잡는다	어쩌면
혀	조그마한	패서너블한	균침도는
악어	다양한	라디오	걱정적인
환한	길다	코	피부
미끄러운	흔치 않은	공룡	파란색
뼈	뱀	감정	동반자
편안한	벌레		

Word list for Text B

fact	window	handle	television
virus	sentence	unclean	printer
clear	dirtier	listen	reason
shower	trust	seriously	unusual
ill	keyboard	calendar	research
survey	hands	bathroom	door
computer	soap	table	face
food	disease		

Word list for Text B (Korean)

진실	창문	문고리	텔레비전
바이러스	문장	불청결한	프린터
청결한	더럽다	듣다	이유
샤워	신뢰하다	심각하게	희한하다
피곤하다	키보드	달력	조사
여론조사	손	변소	문
컴퓨터	비누	식탁	얼굴
음식	질병		

