Age of Acquisition Effect on Speech Perception in Noise (SPIN): Data from heritage speakers of Korean*

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Lee, Sun-Young. (2014). Age of Acquisition(AoA) Effect on Speech Perception in Noise: Data from Heritage Speakers of Korean. *Studies in Foreign Language Education, 28*(2), pp.277-296.

This study investigates heritage speakers' speech perception in noise (SPIN) compared with second language (L2) learners and native speakers of Korean. It has been found that speech perception in an acoustically degraded condition is more difficult for L2 learners than for native speakers of language (e.g., Mayo, Florentine, and Buus, 1997; Shi, 2010) even at the high level of proficiency of L2. In particular, Age of Arrival (AoA) was one of the most important factors affecting speech perception in noise among others. This study extends this line of research to different L2, Korean and to different learner population, heritage speakers. The results of SPIN test with 32 heritage speakers of Korean, 20 non-heritage L2 learners of Korean, and 14 native controls revealed (i) that there was no correlation between SPIN and overall proficiency, (ii) all the groups did better in a low noise condition than at a high noise condition, but (iii) that heritage speakers were not affected by noise level so much as L2 learners and native speakers. Overall, heritage speakers' performance was better than L2 learners' in SPIN. These findings indicate that early exposure, even if limited, to the second language has a positive effect on speech perception in noise in the language.

* This work was supported by Cyber Hankuk University of Foreign Studies Research Fund of 2013. The author is also deeply thankful for Michael Long and Jennifer Koran for their help with data collection and analysis. All errors are mine.

Ⅰ. Introduction

It is seldom noticed that our daily conversation happens in a certain amount of noise in almost every context. As a native speaker of language, such noise to a certain degree hardly hinders our communication. However, when it comes to non-native speakers of a language, hearing and understanding the other speaker's speech in noise is not as easy as it is to native speakers. For example, L2 learners have more difficulty in understanding announcements in an airport than native speakers. Previous studies found that speech perception in an acoustically degraded condition is more difficult for second language (L2) learners than for native speakers of a language (e.g., Mayo et al., 1997; Shi, 2010) even at the high level of proficiency of L2. Difficulties have been found in recognizing speech sounds in different levels: syllables, words, and whole sentence. Also such difficulties are influenced by many factors such as noise level, contextual information, word frequency, first exposure to the language and so on.

In particular, Age of Arrival (AoA) (i.e., first exposure to the language) has been found to be one of the most influential factors in speech perception in noise (SPIN) among the factors. For example, Gor & Lukyanchenko's (2012) study compared heritage speakers and adult L2 learners of Russian and found heritage speakers had an advantage when completing SPIN. Heritage speakers are those who are first exposed to their parent language (a minor language in the society) at birth, but do not fully complete acquiring the language due to their formal education in the major language of the society. Many of them restart learning the language as an L2 as an adult in college, for example. Therefore, although the speakers start formal education of L2 at the same time as adult L2 learners, the time of first exposure to the language is different. It is also noticeable that their exposure to the language is very limited throughout their life as a minor language of the society. Gor & Lukyanchenko's (2012) findings seem to indicate that early exposure to L2 does influence SPIN even though it is very limited throughout the life. She ascribes heritage speakers' better outcomes in SPIN to their enhanced phonological sensitivity. Heritage speakers recognize speech from the early stage of language development unlike other adult L2 learners. In sum, Gor & Lukyanchenko's

(2012) study gives more evidence for the positive influence of early exposure to the language in L2 even though it is limited.

This study extends this line of research to a different L2: Korean. We investigate how early, but limited, exposure to the second language affects SPIN based on the data from heritage speakers and L2 learners of Korean. More data from different types of L2 learners and languages will lead us to a better understanding of speech perception in L2.

Ⅱ. Theoretical Background

1. Speech perception in noise (SPIN) in a second language

Most of us experience difficulty in recognizing speech sound when it comes with very high noise. Speech perception in noise (SPIN) has been studied in various fields such as school classroom research, children with hearing problems, bilingual and trilingual speakers, adult second language learners, and so on. Regarding SPIN in L2, it has been frequently reported that L2 learners have more difficulty than native speakers in understanding speech in acoustically degraded conditions such as public announcements in train stations or airports. Many studies based on English L2 learners' SPIN tests have proven that the L2 learners showed poor performance in a noisy condition compared with in a quiet condition (Buus et al. 1986, Caramazza et al. 1973, Crandell and Smaldino 1996, Florentine 1985a, 1985b, Florentine et al. 1984, McAllister 1990, Mayo et al. 1997, Nabelek and Donahue 1984, Rogers et al. 2006, Takata and Nabelek 1990). These difficulties have been found with various units of speech including syllables (Broersma & Scharenborg, 2010, Rogers et al., 2006), words (isolated words: Rogers et al., 2006; embedded words: Mayo et al., 1997), and whole sentences (Meador et al., 2000).

One of the major issues in the study of SPIN in L2 involves the various influential factors that affect L2 learners' performance. Such factors included noise level, contextual information,

word frequency, learners' degree of exposure to the language, learners' first exposure to the language (i.e., Age of Arrival), and so on. In particular, Age of Arrival (AoA) has been frequently found as one of the most influential factors in speech perception in noise. Many studies of nonnative speakers' speech perception in noise found that only those who were exposed to the language from birth could achieve native-like ability (e.g., Florentine 1985b, Mayo et al. 1997). For example, in Florentine's (1985b) study exploring the relationship between SPIN and amount of exposure, only those who were exposed to English since infancy showed native-like ability in regards to SPIN. Mayo et al.'s (1997) study, actually exploring the AoA effect, compared three groups: early bilinguals (AoA before age 6), late bilinguals (AoA after age 14) and natives. They found no differences among the groups at lower noise conditions. However, group differences were found at higher noise conditions where early bilinguals did better than late bilinguals even though they did not reach native-like performance. These studies showed that AoA is an important factor in achieving a native-like understanding of SPIN.

However, such studies have difficulty in distinguishing the first exposure effect from degree of exposure because early bilinguals often are those who were exposed to the language since birth and continuously throughout their lifetime (that is, their amount of the exposure is also greater than L2). In this sense, heritage speakers are different from early bilinguals in that their exposure is more limited than the early bilinguals because their heritage language is not the major language of the society. Therefore, investigating heritage speakers' SPIN, we can differentiate the AoA effect from the length of exposure effect. Gor & Lukyanchenko's (2012) study explored Russian heritage speakers' SPIN compared with L2 learners and native speakers. In their study, heritage speakers showed better performance than L2 learners, but did not perform better than native speakers. The performance of the three groups were different especially in the high-noise/low-probability condition. The authors ascribe the heritage speakers' advantage to the phonological sensitivity in high-noise condition, not vocabulary knowledge. These findings from Gor & Lukyanchenko's (2012) study indicate that first exposure, rather than length of exposure, does matter in SPIN in L2. This study extends this line of study to the population of heritage speakers of Korean.

2. Heritage Speakers

Heritage speakers (in the U.S. for example) are “bilinguals who are raised in a home where a non-English language is spoken, who speak or merely understand the heritage language and who are to some degree bilingual in English and the heritage language” according to Valdes’s (2000) definition. Heritage speakers are different from typical non-heritage L2 learners in many aspects in terms of their linguistic background of L2. First, the amount of input is very different; heritage speakers receive a significantly greater amount of input than L2 learners. The heritage speakers have much more opportunity to receive input than L2 learners, for example, from their parents, relatives, friends and so on. Second, the mode of input is also different; heritage speakers are more exposed to oral than written input. They also receive input in a more naturalistic setting compared with L2 learners who tend to get input in more instructional settings. Third and most relevant to the present study, the age of first exposure to the second language is different between the two groups; heritage speakers are often exposed to the second language from their parents when they are born. On the other hand, L2 learners are often exposed much later when they become adults. This is particularly of importance because the age of their first exposure has been discussed as one of the major factors affecting the ultimate attainments in L2 acquisition (Bley-Vroman, 1990; DeKeyser, 2000, 2003; Hyltenstam & Abrahamsson, 2003; Long, 1990). Fourth, the process of second language acquisition is different between the two groups in terms of context or mode of language acquisition; heritage speakers’ early L2 acquisition is more implicit and procedural, similar to the acquisition of their first language. In contrast, adult learners’ L2 acquisition is more explicit and declarative, requiring memorization and automatization through practice (DeKeyser, 2000). These characteristics of the linguistic background of heritage speakers were taken into consideration as influential factors in recent studies on second language acquisition, yielding a new field of research in SLA: heritage language acquisition (e.g., Montrul, 2005, 2008, 2010a, 2010b; Polinsky 1997, 2008).

Studies on heritage language acquisition, mainly comparing heritage speakers and adult non-heritage L2 learners (often called L2 learners), found that heritage speakers outperformed

L2 learners in various areas of L2 knowledge. Such advantages of heritage speakers in L2 acquisition were also found in L2 Korean (Lee et al. 2005, Lee et al. 2009). For example, Lee et al. (2009, 2010) found that heritage speakers did better in most of the tasks than English-speaking L2 learners at the same level of oral proficiency dealing with phonology, morphology, syntax, lexis and collocations. Their knowledge of Korean was close to that of native speakers regardless of overall proficiency especially in the perception tasks except for the very low level (ILR 1+). Heritage speakers' better performance was also found in SPIN with L2 Russian as shown in Gor & Lukyanchenko's (2012) study mentioned above.

In this study, speech perception in noise by heritage speakers of L2 Korean is investigated. Even though heritage language learning has been explored using different L2, studies on heritage speakers' SPIN in particular are sparse. In addition, most of the studies on SPIN in L2 are based on English L2. Finally, even though the AoA effect was found in the previous studies, the results are based on only a few number of participants. For example, there were only two early bilinguals in Florentine's (1985b) study and only 6 simultaneous bilinguals in Rogers et al.'s (2006) study. Further studies with increased numbers of participants are needed to generalize the findings.

This study investigated heritage speakers' speech perception in noise (SPIN) compared with non-heritage L2 learners and native speakers in order to better understand the differences between heritage speakers and L2 learners in the process of speech perception in noise in second langauge. The specific research questions of this study are as follows:

1. Does the learners' ability of speech perception in noise in Korean improve as their overall L2 proficiency in Korean increases?
2. Is the learners' ability of speech perception in noise in Korean affected by the noise level?
3. Is there any difference between heritage speakers and non-heritage L2 learners of Korean in their speech perception in noise depending on the noise level?

Ⅲ. Method

1. Participants

A total of 66 adult speakers of Korean participated in this study including 32 heritage speakers, 20 L2 learners and 14 native speakers. The first language of the heritage speakers and L2 learners of Korean is English. Table 1 below describes more details of the participants including the mean age, gender, and the general oral proficiency described using ILR scales.

Table 1. Various Interpretations of Classroom Discourse

P	N	Mean Age	Gender		ILR Levels					
			M	F	1+	2	2+	3	3+	4
NS	14	34	5	9						
HS	32	23	9	23	2	6	8	14	1	1
L2	20	30	15	5	4	4	6	3	2	1
Total	66	28	29	37	6	10	14	17	3	2

P: Participants; N: Number of participants; NS: Native Speakers; HS: Heritage Speakers; L2: L2 learners

All the heritage speakers were born or immigrated to the U.S. before age 7. Both the L2 learners and the heritage speakers started officially learning Korean in or after college. The overall oral proficiency of Korean of the L2 learners and heritage speakers were measured through an individual oral proficiency interview (OPI). OPI is a type of oral proficiency test to measure learners' general speaking ability. In the 20~30 minute-long test, an OPI tester starts conversation with the testee with easier questions and leads to more professional and difficult questions depending on the testee's ability to continue the conversation. In this study, a certified OPI tester conducted the test with the participants individually through a phone interview. The learners' proficiency was labelled using the Interagency Language Roundtable (ILR) speaking scales from 0 representing no proficiency to 5 representing functional native proficiency. ILR scale is used in the U.S. government agencies not only for speaking skills

but also for other skills such as reading, listening, and writing.

2. Materials

The experimental materials consisted of a total of 80 sentences. All of them were full sentences with 9-20 syllables ending in a target verb. The verb was thee to four syllables long. Three fourths of the 80 sentences were constructed with verbs of mid/high frequency and the rest with verbs of low frequency. High frequency verbs are those which appear at least one time per one million words and low frequency verbs are those which appear less than one time per one million words based on the Sejong Corpus. (e.g., Lo: 내 친구는 칼에 손가락을 자주 베어요. vs. mid/high: 영숙씨는 부산에서 기차로 와요.)

Two experimental conditions were manipulated with different noise levels. Half of the 80 sentences were constructed with high noise level (Hi) and the other half with low noise level (Lo). Two different levels of babble noise were superimposed on each sound file of the target sentences.

The speech perception in noise (SPIN) task was used in this experiment. Participants listen to each sentence and repeat the last word (i.e., target verb) of the sentence. For example, a participant listens to a recorded sentence through a laptop computer "남자애가 놀이터에서 울어요.", then they repeat only the last word "울어요." Their responses were automatically recorded onto the computer. All the test items were randomized. Clear instructions were given at the beginning of each task. Before the main test session, three practice items were provided in order to make sure participants knew how to respond.

3. Procedure

All the items were balanced in terms of the number of items for each condition except for the verb frequency condition. For example, half of the 40 sentences in the high noise condition were constructed with context information and the other half were constructed without context. Since low frequency verbs were thought to be too difficult for the L2 learners to understand or repeat

in noise only 16 item were included to check any tendency of frequency effect for those items.

A speech perception in noise (SPIN) task was used in this experiment. In this task, individual participant listens to each sentence with high or low noise superimposed and repeated the last word of the sentence. For example, a participant listens to a recorded sentence through a laptop computer "남자애가 놀이터에서 울어요.", then they repeat only the last word "울어요." Their responses were automatically recorded onto the computer.

All the test items were randomized within each task. Clear instructions were given at the beginning of each task, with several practice items provided, in order to make sure participants knew how to respond.

4. Results

First, regarding our first research question about the relationship between SPIN and overall L2 proficiency, the mean accuracy scores and standard deviations of the SPIN test for each ILR level were calculated. In this analysis, item discrimination analysis was first conducted in order to get a reliable measure of correlation and those items with less than 85% of native speakers' accuracy were eliminated in order to obtain more reliable measure for further correlation analyses. This resulted in 40 items out of 80 in the correlation analyses with which the task showed high internal reliability with a Cronbach α coefficient of .87. The mean accuracy scores and the standard deviations of the SPIN for each ILR levels with 40 items are given in Table 2.

Table 2. Accuracy by Proficiency

ILR Level	Mean Accuracy	SD	No. of Participants
1+	0.58	0.21	6
2	0.81	0.1	10
2+	0.78	0.18	12
3	0.84	0.15	18
3+	0.78	0.19	3
4	0.81	0.23	2

Table 2 shows about 80% of accuracy scores except for ILR 1+ which showed 58% of accuracy. This means that overall, the learners did not have much difficulty listening to the target items in noise correctly repeating them. Next, in order to find out the relationship between SPIN and general oral proficiency, two correlation analyses were conducted. First, Spearman correlation between individual accuracy scores and ILR scales were conducted, and the result of the analysis was statistically non-significant (r = .27, p > .05). Secondly, the Spearman correlation between mean accuracy scores and ILR scales was conducted, and again, no correlation was found between the two (r = .60, p > .05). The results of the correlation analyses are summarized in Table 3.

Table 3. Correlations between SPIN and oral proficiency

Task	N. of Items	Cronbach α	Spearman-Individual (n = 52)	Spearman-Group Mean (n = 6)
SPIN	80 (-40)	0.87	0.27	0.6

The results indicate that the learners' ability to perceive speech in noise develop as early as ILR 2 and the ability stays at the similar level until the high level of proficiency (ILR 4 in this study for example). This tendency is well depicted in Figure 1.

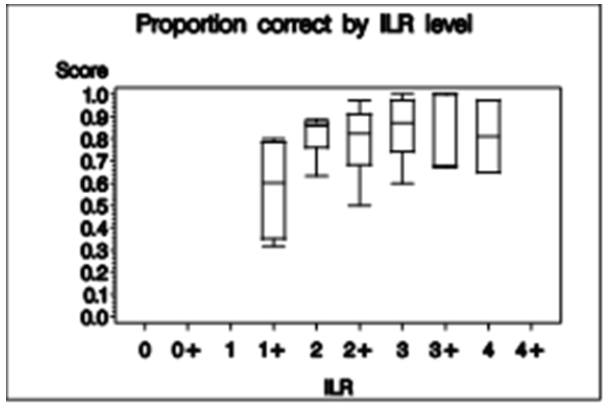

Figure 1. Accuracy by proficiency

In addition, the box and whisker's graph in Figure 1 shows high variability among the learners in the same ILR scale. The results again indicates that the learners at the more advanced level of oral proficiency do not necessarily have better ability to understand speech in noise. This tells us that other factors (not just oral proficiency) are involved in SPIN in L2.

Next, our second research question involves the noise effect on speech perception in noise in Korean as a second language. In order to compare the mean differences between the two conditions, the overall accuracy of the two conditions was collected. In the mean comparison thereafter were included data from all the 80 target items. The mean accuracy scores for each of the two noise levels (high vs. low) were obtained for different noise levels. The results are given in Figure 2.

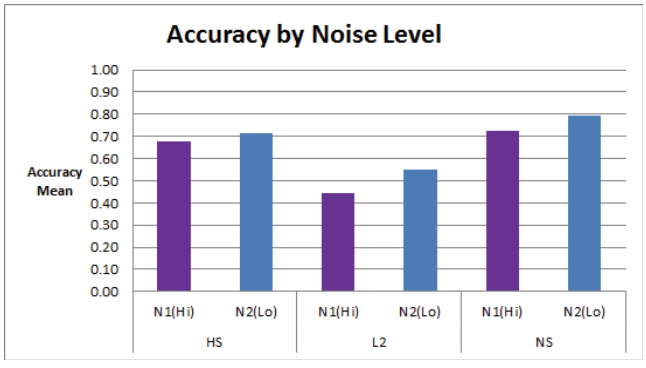

Figure 2. Accuracy by noise level: heritage speakers and L2 learners

Overall, participants did better in low noise condition than in high noise condition across groups. The results of a one-way ANOVA also revealed statistically significant noise effect ($F(1, 61) = 21.681$ $p < .005$), but non-significant interaction between groups. This confirms that the mean difference between low noise and high noise conditions were in the same direction in all the three groups, that is, better performance in low noise condition than high noise condition.

Our third research question involved possible differences between heritage speakers and L2

learners depending on the noise level. In order to find out how much each group is affected by noise level, A paired sample T-test between high noise and low noise was conducted separately in each group. The results revealed that the mean difference between the two noise conditions was statistically significant in L2 groups (t (19) = 3.494, two tailed, p = *0.005*) as well as in native speakers (t(13)=3.293, p = .006), but not in heritage speakers (t(31) = 1.367, two-tailed, p = .08. This indicates that heritage speakers are not affected by noise level in SPIN so much as L2 learners and native speakers in SPIN.

Now, mean accuracy scores among the three groups including native speaker control group were compared in each noise condition. First, one-way ANOVA conducted on the high noise condition showed a statistically significant group effect (F(2, 61) = 38.276, p < *.005*). A post-hoc analysis revealed statistically significant differences between heritages speakers and L2 learners, and native speakers and L2 learners, but not the other comparisons. Similar results were obtained in low noise condition. There was also a statistically significant group effect (F(2, 61) = 13.415, p < *.005*). The effect was significant between heritage speakers and L2 learners, and between native speakers and L2 learners, but not in other comparisons. These results indicate that heritage speakers' performance in SPIN was better than L2 learners' in SPIN, and similar to native speakers'. These tendency appeared throughout the ILR proficiency levels as well depicted in Figure 3.

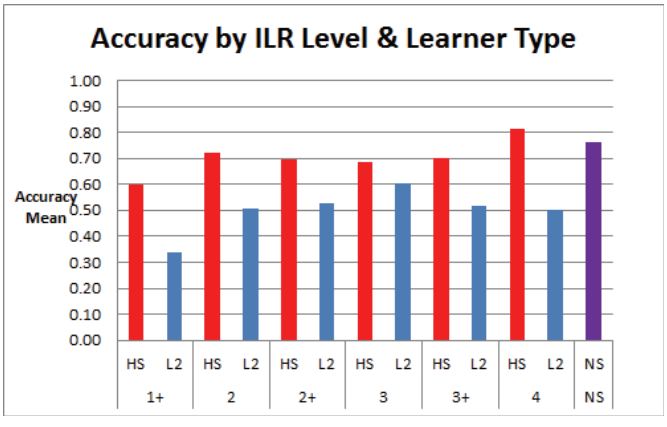

Figure 3. Accuracy by proficiency: heritage speakers and L2 learners

Ⅳ. Discussion

This study investigated heritage speakers' speech perception in niose in L2 Korean compared with non-heritage L2 learners and native speakers. The results of SPIN tests with two noise level conditions revealed the heritage speakers' better performance than non-heritage L2 learners. The results are discussed here according to the research questions.

Our first research question involved the relationship between SPIN and overall proficiency, that is, whether the learners' ability of speech perception in noise in Korean improves as their overall L2 proficiency in Korean increases. The results of Spearman correlation analyses conducted on the combined data of heritage speakers and L2 learners showed no correlation between the SPIN and overall proficiency. The reason for that was ascribed to the combination of different types of learners, that is heritage and non-heritage L2 learners. A close investigation of the individual data in the same proficiency groups revealed great variability of SPIN scores within group.

The second research question involved noise level effect in SPIN in Korean. The results of SPIN test showed that all the three groups did better in low noise condition than in high noise condition. These asymmetrical performance was found in all groups. However, there was some differences in each group, which related to the third research question.

Our third research question asked whether there was any difference between heritage speakers and L2 learners of Korean in their speech perception in noise depending on the noise level. First, it was found that the difference between the two noise condition was not statistically significant in heritage speakers, unlike the other groups. In particular L2 learners did much better in low noise condition than in high noise condition. This shows different noise effects on SPIN between heritage speakers in the one hand and L2 learners and native speakers in the other hand. The reason for this should be more investigated, but it seems that heritage speakers did not take advantage of less noisy condition as much as native speakers did. Secondly, overall performance in SPIN was better in heritage speakers than in L2 learners.

When the data were divided into two learner groups in each ILR level, it was found that heritage speakers' performance in SPIN was better than L2 learners' at the same levels of oral proficiency across the levels. However, the developmental pattern of heritage speakers' SPIN was somewhat similar to that of L2 learners'. There was a big increase of SPIN scores from ILR1+ to ILR2, but little change after that in both groups. To summarize, the developmental curve of SPIN scores from ILR1+ to ILR4 is similar between the two groups, but the SPIN scores are higher in heritage speakers than in L2 learners throughout the levels (about 70% in Heritage speakers vs. about 50% in L2 learners). In fact, heritage speakers' SPIN scores were very close to native speakers' from ILR 2 (76%). The results indicate that SPIN is very difficult task for L2 learners and that heritage speakers seem to have a native-like advantage in SPIN once they get to the proficiency of ILR2. The reason for that is discussed in detail later.

Overall, the results of the SPIN test in this study revealed that heritage speakers are different from non-heritage L2 learners in SPIN, but similar to native speakers in terms of accuracy. Regarding non-heritage L2 learners' performance, the results of this study conforms to the findings of the previous studies in that L2 learners have difficulty in recognizing speech in acoustically degraded conditions. The previous studies are mostly based on L2 English (e.g., Buus et al. 1986, Caramazza et al. 1973, Crandell and Smaldino 1996, Florentine 1985a, 1985b, Florentine et al. 1984, McAllister 1990, Mayo et al. 1997, Nabelek and Donahue 1984, Rogers et al. 2006, Takata and Nabelek 1990), in which the target word was a noun (i.e., object of the verb in SVO language). This study provides another piece of evidence from data based on a typologically different L2, Korean, a SOV language where the target word is a verb.

Regarding heritage speakers' better performance than non-heriage L2 learners in SPIN, the results of this study partly conforms to Gor & Lukyanchenko's (2012) findings based on Russian. Russian heritage speakers did better than non-heritage L2 learners in SPIN. However, their performance was not as close to native speakers as in the present study. The heritage speakers' performance was different from native speakers' particularly in the high-noise/ low-probability context condition. On the other hand, the heritage speakers were not affected by noise levels as much as native speakers in our study. One of the reasons for this

difference seems to relate to the proficiency of the learner. The heritage speakers in Gor & Lukyanchenko's (2012) study were evenly distributed throughout all the ILR levels from IRL 1 to IRL 4+ (two to six in each level). However, in our study, almost half of the heritage speakers (14 out of 32) belonged to ILR 3 which is quite a high level of proficiency. Therefore, the higher general proficiency of the Korean heritage speakers in this study might have resulted in more native-like performance in SPIN compared with less proficient Russian heritage speakers.

Now, given the better performance of heritage speakers in SPIN in this study as well as Gor & Lukyanchenko's (2012) study, it seems safe to say that L2 SPIN is more affected by first exposure to the language than by amount of exposure to the language. In addition, the finding in both studies that heritage speakers did better than native speakers indicates that proficiency does not affect SPIN so much as general proficiency when the learners have different language time of first exposure.

Gor & Lukyanchenko's (2012) proposes phonological sensitivity and high processing cost in L2 learners and heritage speakers compared with native speakers in high noise condition. They show that heritage speakers have more of an advantage in mapping sounds and words than non-heritage L2 learners using the results of a picture word description task. In this task, participants look at a picture listening to a word and decide if they match each other (e.g. pul 'fire' & phul 'grass'). In this task, the heritage speakers did much better in than L2 learners. It remains to see if the Korean heritage speakers will also show better performance than non-heirtage L2 learners in a similar task in the further study.

Ⅴ. Conclusion

This study investigated heritage speakers' speech perception in noise compared with English-speaking L2 learners and native speakers of Korean. It was found that the heritage speakers did better at perceiving speech sounds in L2 than non-heritage L2 learners. Their

ability to perceive speech in noise was similar to native speakers' even at the very early stage of L2 development. In addition, heritage speakers' SPIN was not so much affected by different levels of noise as L2 learners' was. In these aspects, the heritage speakers were different from native speakers who showed more noise effect on SPIN.

The findings of this study conform to the previous findings that speech perception in an acoustically degraded condition is more difficult for L2 learners than for native speakers of language (e.g., Mayo et al., 1997; Shi, 2010) even at the high level of proficiency of L2 (Gor & Lukyanchenko, 2012). However, heritage speakers are different from L2 learners in their development of ability of speech perception in noise in L2, probably due to their superior abilities in sound-word mapping.

These findings reveal that early exposure, even if limited, to the second language has a positive effect on speech perception in noise in the language. This provides an additional piece of evidence for the previous finding that AoA is one of the most influential factors in SPIN. The findings of this research should be confirmed with increased sample size in the further research. Nevertheless, they seem to suggests the importance of the timing of first exposure to the target language in second language acquisition.

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<Korean Abstract>

이선영. (2014). 소음속말인지에 있어서 나타난 초기노출시기의 효과: 한국어 교포학습자의 데이터를 기반으로. *외국어교육연구, 28*(2), pp.277-296.

본 연구는 영어권 한국어 교포학습자의 소음속말인지에 대하여 제2언어학습자와 모국어화자와 비교하여 알아본 연구이다. 일반적으로 제2언어학습자들은 숙달도가 높아도 여전히 모국어화자에 비하여 음성적으로 좋지 못한 환경에서 말을 인지하는 것을 어려워 한다는 것이 그동안의 연구에 의하여 밝혀져 왔다. 특히 제2언어학습자의 소음속말인지에 영향을 미치는 여러 가지 요소 중에 처음 제2언어에 노출된 시기가 가장 영향을 미치는 요소 중에 하나로 밝혀져 왔다. 본 연구는 이 분야의 연구를 한국어 교포학습자에 대한 연구로 확장한 것이다. 32명의 한국어 교포학습자, 20명의 제2언어학습자와 14명의 한국어 모국어 학습자가 소음속말인지 테스트에 참여하였다. 실험결과, 교포학습자가 같은 구어숙달도의 제2언어학습자 보다 더 나은 소음속말인지 능력을 보였다. 또한, 교포학습자들은 제2언어학습자와는 달리 소음의 크기에 영향을 받지 받았다. 이는 제2언어학습자의 소음속말인지가 그들의 언어적 배경에 관련 있으며, 특히 비록 제한적이더라도 처음 제2언어에의 이른 노출시기가 긍정적 영향을 미침을 보여준다고 하겠다.

Key words: Speech perception in noise (SPIN), Heritage speakers, English-speaking learners of Korean.
소음속말인지, 교포학습자. 영어권 한국어학습자

Examples in: Korean
Applicable Languages: Korean
Applicable Levels: Elementary

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received in June 29, 2014
revised version received in August 18, 2014
received version accepted in August 20, 2014