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Loanword Processing in Korean English Bilinguals

Lee, Sumi
(University of Arizona)

Lee, Sumi. 2025. Loanword Processing in Korean English Bilinguals. ***Sign Languages and Linguistics Convergence Research,*** *2*(1), 57-75. This study investigates the visual word processing of English-derived loanwords in Korean-English bilinguals. While loanwords constitute approximately 5.6% of Korean vocabulary, their cognitive status in bilingual speakers remains underexplored. We examined whether Korean-English bilinguals process loanwords as fully integrated Korean vocabulary or as items requiring cross-linguistic mediation. In a lexical decision task, participants responded to native Korean words, established English-derived loanwords, direct Hangul transcriptions of English words not accepted as loanwords ("foreign words"), and nonwords. Response times revealed that loanwords were processed similarly to native Korean words (M=722.42ms vs. M=717.17ms) with no significant difference. However, both categories were processed significantly faster than foreign words (M=786.81ms) and nonwords (M=858.76ms). These results suggest that established loanwords are processed as integral components of the Korean lexical system rather than as foreign elements requiring additional processing resources. The findings demonstrate that the theoretical distinction between loanwords and foreign words is reflected in cognitive processing and contribute to our understanding of lexical organization in bilingual speakers.

Key Words: Loanwords, Bilingual Lexical Processing, Korean, Visual Word Recognition, Lexical Decision, Psycholinguistics

1. Introduction

Languages constantly evolve through contact with other languages, leading to the adoption of loanwords. In Korean, loanwords are defined as expressions derived from other languages that have been integrated into the Korean language system with societal acceptance (National Institute of Korean Language, 1986). These loanwords, which constitute approximately 5.6% of the Korean vocabulary, with 57.5% originating from English as reported by the National Institute of Korean Language (2025), have become an essential part of everyday communication for Korean speakers.

While loanwords are theoretically considered part of the Korean language system, the cognitive processing of these words in bilingual speakers remains underexplored. Previous research has primarily focused on phonological aspects of loanword adaptation. Peperkamp et al. (2008) examined how Japanese speakers perceive word-final [n] in loanwords, proposing that non-native sounds undergo perceptual assimilation to the phonetically nearest native sounds. Similarly, Daland et al. (2019) investigated the "illusory vowel effect" in Korean speakers, concluding that loanword phonological perception differs from typical L1 speech perception processes.

Tamaoka and Miyaoka (2003) explored the cognitive processing of Japanese loanwords in katakana, finding that lexical representation of the original English word was only activated when participants had limited exposure to the katakana form. While this research provided valuable insights into loanword processing, it focused primarily on auditory speech perception rather than visual word recognition. This distinction is crucial because visual and auditory processing pathways may engage different cognitive mechanisms when accessing cross-linguistic lexical representations. Furthermore, the majority of loanword research has examined monolingual speakers who rely solely on the adapted form within their native language system. This approach overlooks the unique processing dynamics that may occur in bilingual speakers who possess active knowledge of both the source language (English) and the target language containing the loanwords. Korean-English bilinguals represent a particularly compelling population for investigating these cross-linguistic influences, as they can simultaneously

access both the original English lexical entry and its Korean adaptation during visual word processing. Understanding how these dual representations interact during real-time visual recognition can illuminate fundamental questions about bilingual lexical organization and cross-linguistic activation patterns that remain underexplored in current loanword processing research.

Investigating loanwords through the modality of visual perception is critically important because it provides insights into how orthographic representations may trigger different lexical access routes compared to auditory processing. While phonological adaptation of loanwords has been well-documented, the visual recognition of loanwords presents a distinct cognitive challenge, especially in languages like Korean where foreign words undergo significant orthographic transformation when represented in Hangul. Visual processing also allows for more precise measurement of processing times without the confounding factors of speech rate or phonological variations.

The inclusion of bilingual participants offers a unique window into the complex architecture of the bilingual lexicon. For Korean-English bilinguals, loanwords occupy a theoretically ambiguous position—they are integrated into the Korean lexical system but retain etymological connections to English. This raises fundamental questions about lexical organization: Do bilinguals process loanwords through a single Korean lexical route, or do they simultaneously access both Korean and English lexical representations? Does the processing of loanwords require mediation through an interlanguage system that bridges the two languages? Previous research suggests that bilinguals may experience "dual activation" of both languages even when operating in a monolingual context (Kroll & Bialystok, 2013), but how this applies specifically to loanwords remains unclear.

Loanwords may differ from regular native words in several important ways. First, they often contain phonological structures that, while adapted to Korean phonotactics, still maintain some "foreign" characteristics. For example, English loanwords frequently introduce consonant clusters that are uncommon in native Korean words, such as /st/ in "스타일" (style) or /sp/ in "스포츠" (sports), which require epenthetic vowels but preserve the cluster relationship. Additionally, loanwords often contain syllable structures that violate typical Korean patterns—while Korean strongly favors CV (consonant-vowel) syllables, loanwords like "컴

퓨터" (computer) introduce CVC patterns with coda consonants like /m/ and /t/ that are less frequent in native vocabulary. Furthermore, many English loanwords preserve vowel sequences that are rare in Korean, such as the /eu-i/ sequence in "뉴스" (news) or /a-i/ in "타이어" (tire), creating phonological patterns that signal their foreign origin even after adaptation. These retained foreign characteristics may create distinct processing signatures that differentiate loanwords from native Korean words during visual recognition. Second, for bilinguals, loanwords may activate cross-linguistic associations with their source language forms. Third, loanwords like "바나나" (/pa.na.na/, "banana") frequently enter the lexicon to represent novel concepts without native Korean equivalents, potentially leading to different semantic network formations. These distinctive properties may result in processing mechanisms that differ from those used for native vocabulary, even when the loanwords have been fully incorporated into everyday Korean usage.

This research aims to address these gaps by investigating how Korean-English bilinguals process English-derived loanwords in Korean orthography (Hangul) compared to native Korean words and direct Hangul transcriptions of English words not accepted as loanwords in Korean. The central question is: Are loanwords truly processed as Korean words by Korean-English bilinguals, or do they constitute a special lexical category that requires access to English language representations or an intermediate interlanguage system? By measuring response times across different conditions, this study will provide insights into the cognitive status of loanwords for bilingual speakers who have proficiency in both the borrowing and source languages.

This study hypothesizes that English-derived loanwords will elicit longer response times than native Korean words during visual word recognition, despite their apparent integration into the Korean lexical system. Such processing delays would suggest that loanwords engage distinct cognitive mechanisms, potentially involving automatic activation of their original English lexical representations or requiring mediation through cross-linguistic mapping processes that are unnecessary for native word recognition. The results will have implications for our understanding of bilingual lexical processing, the status of loanwords in the mental lexicon of bilingual speakers, and theoretical models of cross-linguistic lexical organization.

2. Methods

2.1. Participants

Native Korean speakers (n=17) recruited at Sogang University in Seoul, South Korea, participated in this study. All participants demonstrated high English proficiency, achieving level 2 or above on the Korean College Scholastic Ability Test (CSAT) English section, which corresponds to the top 11% of test-takers in their cohort year.

For the purposes of this study, we adopt a functional definition of bilingualism that encompasses individuals with high proficiency in a second language acquired through formal education, rather than the traditional definition requiring native-like competence in two languages from early childhood (Grosjean, 2010). This approach aligns with contemporary bilingual research recognizing that functional bilingual processing can occur in individuals with strong L2 proficiency, even when one language is clearly dominant (Kroll & Bialystok, 2013). Given that our participants possess sufficient English knowledge to access both the Korean loanword forms and their English etymological sources during word processing, we refer to them as Korean-English bilinguals within this functional framework.

2.2. Materials

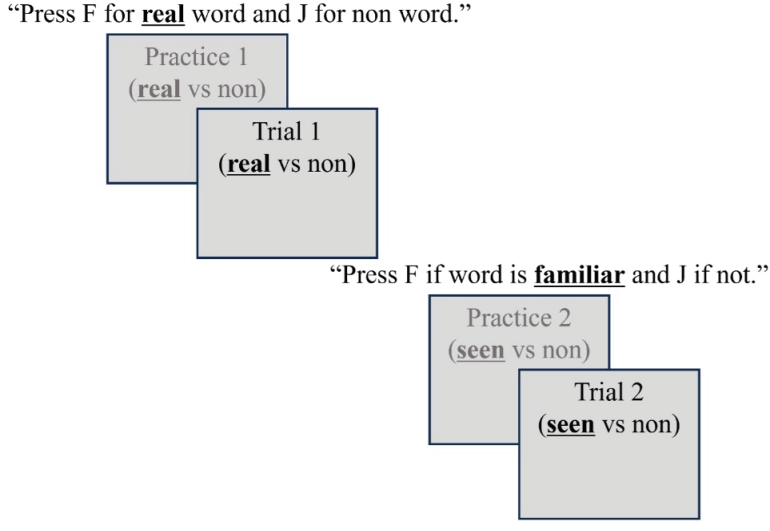
20 words each for the four conditions matched in syllable length and relative frequency in the Korean corpus: (a) direct Hangul transcriptions of English words that are not accepted as loanwords in Korean namely “Foreign words”, (b) frequently used English derived loanwords, (c) Korean native words and (d) phonotactically legal pseudowords in Hangul. Here I choose the term “nonword’ to describe condition (d). The experiment was implemented via FindingFive.

(a) Example of foreign word: continue (kʌn.tʰi.nju 컨티뉴)
(b) Example of loanword: banana (pa.na.na 바나나)
(c) Example of Korean native word: raincloud (mʌk.ku.ɾim 먹구름)
(d) Example of nonword: ‘muto’ (mʌ.tʰo 머토)

The javascript code used for this study is specialized for the FindingFive platform, and is available upon request.

2.3. Experiment procedure

In Hangul, subjects are shown a single word from one of the four conditions. Subjects are asked to respond to two prompts in the following order:



[Figure 1] Order of experimental procedures

Note. The participants went through practice sessions for 2 prompts before the actual trials. The first set (practice 1, actual trial 1) was prompting to respond if the word was real and the second set (practice 2, actual trial 2) was prompting to respond if the word was familiar.

3. Results

Analysis of participant responses confirmed the hypothesis that processing differs across word categories, particularly between foreign words and established Korean vocabulary.

3.1. Familiarity judgement

To validate stimulus categorization, participants rated their familiarity with each word. As shown in Table 1, participants demonstrated high familiarity with foreign words, native Korean words, and loanwords (approximately 99% for each category), while recognizing only 9.71% of nonwords. During practice sessions, participants correctly identified 100% of the foreign, Korean, and loanword stimuli, confirming the validity of our stimulus categorization.

[Table 1] A summary of participants' responses to question asking for familiarity

	Foreign	Korean	Loan	Non
Practice	34/34 100%	34/34 100%	34/34 100%	6/34 17.65%
Actual	338/340 99.11%	339/340 99.71%	336/340 98.82%	33/340 9.71%

Note. The numbers represent the instances participants responded the word is familiar. For example, 34/34 means that participants replied 34 words were similar out of 34 stimuli in that condition. The percentage is the calculated ratio of how many words were viewed as familiar.

[Table 2] A summary of participants' response times to question asking for familiarity

Foreign	Korean	Loan	Non
693.21 (297.12)	677.4 (291.42)	696.87 (295.74)	773.69 (271.27)

Note. The numbers represent the average response times participants responded the word is familiar in milliseconds (ms). The number in the parentheses is the standard deviation. Outliers were trimmed for 3 SDs from the top and the bottom.

3.2. Lexical decision task

The primary research question was addressed through a Lexical Decision Task (LDT) across all four word categories. Table 3 summarizes participant accuracy in identifying real words. During the experimental session, participants achieved

100% accuracy for foreign words, Korean words, and loanwords. For nonwords, participants incorrectly classified only 13 out of 340 stimuli (3.82%) as real words, demonstrating strong discrimination ability.

[Table 3] A summary of participants' responses to question asking for whether presented stimulus is a real word

	Foreign	Korean	Loan	Non
Practice	32/34 94.12%	34/34 100%	34/34 100%	2/34 5.88%
Actual	340/340 100%	340/340 100%	340/340 100%	13/340 3.82%

Note. The numbers represent the instances participants responded the word is real. For example, 34/34 means that participants replied 34 words were real out of 34 stimuli in that condition. The percentage is the calculated ratio of how many words were viewed as real.

Response time (RT) data, presented in Table 4, revealed a clear processing hierarchy. Native Korean words were processed most quickly (M = 717.17 ms, SD = 264.63), followed closely by loanwords (M = 722.42 ms, SD = 250.98). Foreign words required longer processing times (M = 786.81 ms, SD = 297.25), while nonwords demanded the longest processing time (M = 858.76 ms, SD = 302.63). This pattern largely confirms our initial hypothesis regarding the cognitive status of different word categories.

[Table 4] A summary of participants' response times to question asking for whether presented stimulus is a real word

Foreign	Korean	Loan	Non
786.81 (297.25)	717.17 (264.63)	722.42 (250.98)	858.76 (302.63)

Note. The numbers represent the average response times participants responded the word is real in milliseconds (ms). The number in the parentheses is the standard deviation. Outliers were trimmed for 3 SDs from the top and the bottom.

3.3. Statistical analysis

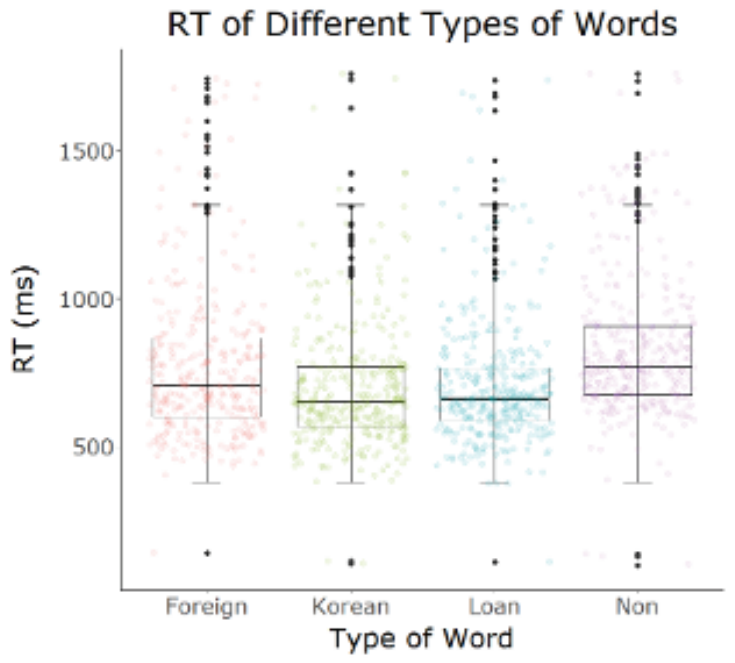
To ensure robust analysis, outliers were systematically removed from the dataset. Response times exceeding 7000 milliseconds were eliminated, as were values beyond 3 standard deviations from the mean. This outlier removal process resulted in 156 datapoints being excluded, leaving 1204 datapoints for final analysis.

Pairwise t-tests were conducted between all condition pairs (Table 5). Statistical significance was found for all comparisons except between Korean words and loanwords. This non-significant difference between Korean words and loanwords provides compelling evidence that loanwords are not only prescriptively categorized as part of the Korean language system but also processed similarly to native Korean words at the cognitive level by Korean-English bilinguals.

[Table 5] A summary of all possible pairwise t-test results for different types of words

Foreign * Korean	t(631.15)= 3.92, p<0.001***
Foreign * Loan	t(631.65)=3.27, p=0.001**
Foreign * Non	t(646.69)=-2.85, p=0.005**
Korean * Loan	t(663.94)=-0.72, p=0.47
Korean * Non	t(633.75)=-7.20, p<0.001***
Loan * Non	t(633.79)=-6.52, p<0.001***

Note. Outliers were trimmed for 3 SDs from the top and the bottom.



[Figure 2] Boxplot of RT distribution according to different types of words

Note. Y-axis represents the response time in milliseconds (ms) and the X-axis represents the type of word in the order of "foreign word" in red, "Korean word" in green, "loanword" in blue, and "nonword" in purple. For the data used for this boxplot, outliers were trimmed for 3 SDs from the top and the bottom.

The response time distributions across all conditions are visualized in Figure 2, demonstrating the clear processing advantage for native Korean words and loanwords compared to foreign words and nonwords. This pattern suggests that loanwords, despite their foreign etymology, have been fully integrated into the Korean mental lexicon of our bilingual participants.

3.4. Different modes of responses

Despite the experimenter's request to participate in this experiment with a laptop and Google Chrome browser which is ideal for the FindingFive platform, some participants used the smartphone in which the response times differed presumably due to the device processing time differences.



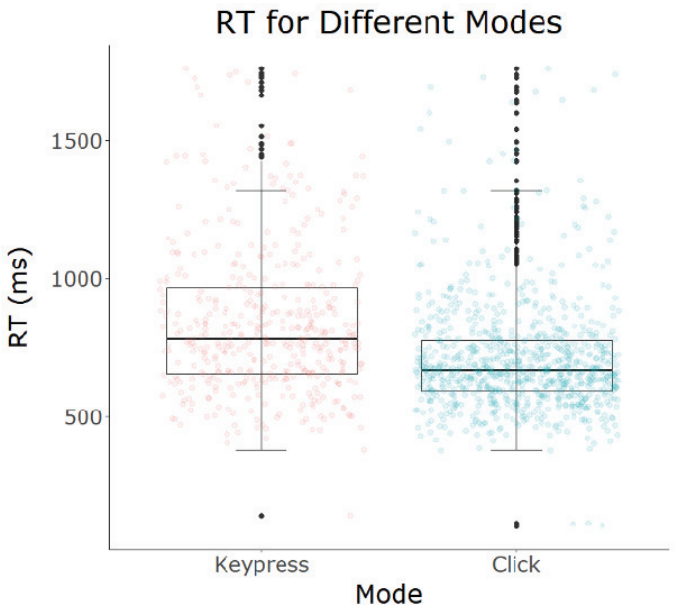
[Figure 3] An example of the screen displayed to the participants via FindingFive, using a laptop device with Google Chrome browser

Figure 3 and Figure 4 show the differences between two modes of experiment participation. Figure 3 is an example of the screen displayed to the participants using a laptop device, and Figure 4 is an example of the screen displayed to the participants using a smartphone device with the Google Chrome browser mobile application.



[Figure 4] An example of the screen displayed to the participants via FindingFive, using a smartphone device with the Google Chrome browser mobile application

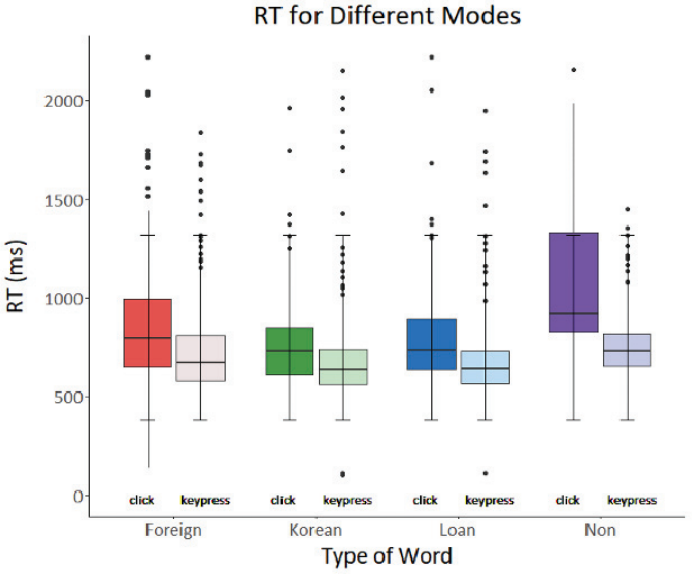
Figure 5 shows the distribution of RTs according to different mode of response for only accurate responses. Keypress is when a participant responded with a keyboard which is the ideal experimental setting and click is when a participant responded by touching their screens or using a mouse. A post-hoc survey confirmed that 100% of the clicked responses were from touching their screens using a smartphone device.



[Figure 5] Boxplot of RT distribution according to different mode of response for only accurate responses

Note. Y-axis represents the response time in milliseconds (ms) and the X-axis represents the mode of response in the order of "Keypress (keyboard)" in red, and "Click (touch screen or mouse)" in blue. For the data used for this boxplot, outliers were trimmed for 3 SDs from the top and the bottom.

In fact, an overall ANOVA analysis confirmed that there was an expected significant effect for type $F(3,1316)= 24.45$, $p<0.001$***, but also for mode of response $F(1,1316)=115.89$, $p<001$***. The interaction between type of word and mode of response was statistically significant as well ($F(3, 1316) = 13.51$, $p < .001$***). Figure 6 below shows the distribution of RTs for different modes of responses (Keypress, Click) to 4 types of words (foreign, Korean, loan, non). Overall, keypressed responses showed shorter response times compared to clicked responses, but the trend for Korean and loanword being the lowest in RTs and foreign words being higher was consistent across modalities.



[Figure 6] Boxplot of RT distribution according to different mode of response for only accurate responses

Note. Y-axis represents the response time in milliseconds (ms) and the X-axis represents the mode of response in the order “foreign word” in red, “Korean word” in green, “loanword” in blue, and “nonword” in purple. The darker colors are for “Click” and the lighter colors represent “Keypress” response modes. For the data used for this boxplot, outliers were trimmed for 3 SDs from the top and the bottom.

4. Conclusion

The findings of this study align with our initial hypothesis regarding the processing of English-derived loanwords by Korean-English bilinguals. The results demonstrate that Korean loanwords are processed differently from direct Hangul transcriptions of English words (the foreign word condition), despite controlling for familiarity across conditions. Most notably, the response time data reveal that loanwords are processed similarly to native Korean words, with no statistically significant difference between these two conditions.

This pattern suggests that loanwords are not only prescriptively categorized as part of the Korean language system (National Institute of Korean Language, 1986) but are also processed in ways that are processing-wise equivalent to native Korean vocabulary. However, we acknowledge that our design specifically targets the bilingual advantage in cross-linguistic lexical access that would be absent in Korean monolinguals. While high-frequency loanwords like 바나나 may indeed feel native-like to both populations, the critical difference lies in bilinguals' ability to automatically access the English etymological form "banana" during Korean loanword processing, creating measurable processing costs even for highly familiar items that would not occur in Korean monolinguals who lack English lexical representations. This finding contributes to our understanding of lexical integration in the bilingual mental lexicon, suggesting that once foreign-derived words become established as loanwords, they achieve a processing status comparable to native vocabulary.

The significant difference in processing between foreign words (direct transcriptions) and loanwords is particularly informative. Both word types contain similar phonological elements when written in Hangul, yet participants demonstrated distinct processing patterns. The decision to present English words in Hangul was made to isolate lexical processing from script-switching effects, as presenting English words in Latin script would introduce orthographic processing differences that could overshadow lexical access patterns, following established cross-linguistic research showing that script effects and lexical effects can be dissociated (Hoshino & Kroll, 2008). This aligns with Tamaoka and Miyaoka's (2003) finding that lexical representations of loanwords can be activated independently of their source language origins once they become established in the borrowing language.

Unlike the findings of Daland et al. (2019) regarding phonological perception, where loanword perception was found to differ from typical L1 speech perception, our results suggest that at the level of visual word recognition, loanwords appear to be fully integrated into the L1 lexical processing mechanisms. The Hangul script may serve as a language-specific cue that initially directs processing toward Korean lexical representations, but phonological and semantic overlap with English may subsequently activate English entries, creating competition or facilitation effects depending on factors such as lexical frequency, semantic

transparency, and degree of phonological adaptation.

This orthography-to-phonology-to-semantics processing cascade could explain why loanwords show intermediate processing costs between native and foreign words, as they benefit from orthographic familiarity while incurring cross-linguistic activation costs. This difference between auditory and visual modalities of loanword processing merits further investigation.

Several methodological limitations should be considered when interpreting these results. While the number of stimuli per condition (N=20) falls within acceptable parameters for a behavioral study, the nonword condition contained fewer stimuli than would be ideal for balanced comparison. Additionally, as this experiment was conducted online, response mode could not be strictly controlled, potentially introducing variability in response times. High-frequency loanwords may have achieved sufficient entrenchment in the Korean lexical system to pattern similarly to native words, while low-frequency loanwords may retain stronger activation of English representations. This frequency-dependent processing would support models of gradual lexical integration where repeated exposure reduces cross-linguistic activation costs, and future research should systematically vary loanword frequency to test this integration hypothesis.

Future research should address these limitations by replicating the study in a controlled laboratory setting with balanced stimulus sets across all conditions. Furthermore, extending this research to older Korean speakers would provide valuable insights into potential generational differences in loanword processing. As suggested by Peperkamp et al. (2008), different age groups may exhibit varying degrees of perceptual assimilation for non-native language elements, which could affect loanword processing. Future studies could include both Hangul and Latin script conditions to separate orthographic and lexical effects, and incorporate lower-frequency loanwords to examine how degree of lexical entrenchment affects cross-linguistic processing patterns.

In conclusion, this study provides evidence that for Korean-English bilinguals, established loanwords are processed as integral components of the Korean lexical system rather than as foreign elements requiring additional processing resources or cross-linguistic mediation. These findings contribute to our understanding of lexical organization in bilingual speakers and how borrowed vocabulary becomes

nativized not only in linguistic description but also in cognitive processing. The distinct processing patterns observed for foreign words versus loanwords underscore the psycholinguistic reality of the theoretical distinction between these categories (Kroll & Bialystok, 2013), even when both are represented in the orthography of the borrowing language.

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Lee, Sumi
1200 E University Blvd, Tucson, Arizona, United States
Researcher, Department of Linguistics,
University of Arizona
Email: sumilee@arizona.edu

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