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### **Orthography effects in loanword adaptation: Korean speakers' adaptation process on the English reduced vowel**

Until now, little seems to be known about the influence of orthography on loanword adaptation because this influence has been described as marginal or even negligible (LaCharité & Paradis, 2005). However, an increasing number of studies have found evidence that orthography plays a significant role in loanword phonology (Jun, 2002; Iverson, 2005; Detey & Nespoulous, 2008; Daland *et al.*, 2015). In the current work, we demonstrate that orthography of the source language does indeed influence loanword adaptation by investigating how Korean speakers adapt the English reduced vowel which appears in unstressed syllables. If Korean speakers rely on phonetic clues to adapt the English reduced vowel, phonetically [ə], the reduced vowel would necessarily be adapted as Korean /ʌ/, which is the most similar vowel between the two languages in both production and perception. However, as the English reduced vowel is mapped to Korean /i/, /ĩ/, /u/, /ɛ/, /ʌ/ and /ɑ/, we can clearly see that these mappings between source English reduced vowel vary greatly.

Here, we conduct both a corpus and an experimental study to observe trends in the adaptation of the English reduced vowel to Korean. The goal of the former is to investigate trends in established loans in Korean, while our experimental study aims to scrutinize tendencies in the online adaptation process. The results of the corpus study (Table 1) show that Korean speakers not only use perceptual mapping strategy, but also refer considerably to orthographic information. The experimental study consists of three different sets of spelling only, sound only, and mixed condition settings. The stimuli are English nonce-words and recorded by one American English speaker. The participants of each set were asked to write down what they heard or see from the computer screen. The results of the experimental study (Table 2) demonstrate that a grapheme-to-phoneme mapping is more likely to occur when only orthographic information is given, and perceptual mapping is more likely to occur when only sound information is given. The results of the mixed condition setting suggest that participants are more sensitive to sound stimuli than visual stimuli when both stimuli are given simultaneously. Interestingly, among these three experimental conditions, this mixed condition tendency is the most similar to that of the established loans. A mixed-effect logistic regression model for online adaptation demonstrates that Korean speakers' adaptation of English reduced vowel is significantly influenced by the different adaptation conditions. We also find that there are significant differences in the degree of reference to orthographic information depending on what the input English graphemes are and which consonant is preceded to the target reduced vowel. The present study concludes that adaptation conditions are considerably important in deciding the adapted form of loanwords, which means that orthography should be considered as a crucial factor to understand the nature of loanword adaptation, along with phonetic and phonological factors.

source grapheme	Korean adapted vowels (%)							sum (%)
	/a/	/ɛ/	/i/	/ʌ/	/ɨ/	/o/	/u/	
<a>	51.9	2.5	-	45	0.6	-	-	100
<e>	1.5	19.8	2.7	73.1	3	-	-	100
<i>	-	-	98.9	1.1	-	-	-	100
<o>	0.3	-	-	56.4	1.7	41.1	0.6	100
<u>	2.1	-	-	56.8	1.1	-	40	100
consonant cluster	-	-	-	-	98.2	-	1.8	100

Table 1. Mean percentage of adaptation by input grapheme in established loans

source grapheme	condition	Korean adapted vowels (%)							sum (%)
		/a/	/ɛ/	/i/	/ʌ/	/ɨ/	/o/	/u/	
<a>	sound	-	2.5	3.8	71.3	16.3	6.3	-	100
	spelling	89.2	8.3	-	2.5	-	-	-	100
	mixed	23.3	3.3	0.8	60	12.5	-	-	100
<e>	sound	-	6.9	6.9	58.1	17.5	10.6	-	100
	spelling	-	67.5	13.3	13.3	5.8	-	-	100
	mixed	0.8	20	4.2	53.3	21.7	-	-	100
<i>	sound	-	5.6	9.4	44.4	25.6	14.4	0.6	100
	spelling	-	-	90.8	3.3	5.8	-	-	100
	mixed	-	5.0	26.7	33.3	35	-	-	100
<o>	sound	1.9	-	1.9	75	6.9	14.4	-	100
	spelling	0.8	-	-	-	3.3	95.8	-	100
	mixed	7.5	-	-	66.7	6.7	19.2	-	100
<u>	sound	-	1.9	2.5	59.4	20	16.3	-	100
	spelling	-	-	-	26.7	-	-	73.3	100
	mixed	-	-	-	76.7	13.3	-	10	100
consonant cluster	sound	-	-	-	38.5	42.7	14.6	4.2	100
	spelling	-	-	-	-	100	-	-	100
	mixed	-	-	-	9.7	90.3	-	-	100

Table 2. Mean percentage of adaptation by different experimental condition

## References

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