INTRODUCTION

How speech sounds map onto written language depends on a) the level at which mapping occurs in a writing system—phonemic (alphabetic), morphemic (logographic), or syllabic (syllabary), b) the linearity or nonlinearity of the orthography, and c) orthotactic constraints (language-specific rules governing the permissible sequencing of letters or characters in a word).

Thus, when listening to speech, our perception of speech sounds is influenced by our knowledge of how the words are written. In the first demonstration of this effect, Ben-Dror, Frost and Bentin (1995) presented Hebrew-English biliterate adults with spoken CVC words in each language and asked them to drop the “first sound” of each word and say what remained. The “first sound” was judged to be a phoneme for English words but a syllable for Hebrew words, presumably reflecting the “inherent” vowels associated with consonants in written Hebrew. A syllable-based segmentation preference was also noted for Hindi CVC words containing implicit vowels (Vaid & Chen, 2010); however, for CVCC words (i.e., words beginning with two consonants), the “first sound” was now perceived to be the initial phoneme. This suggests that in “hybrid” writing systems such as those used in India, which are classified as part-alphabetic and part-syllabic, sound segmentation will vary depending on syllable structure.

Sound segmentation in readers of Hangul

Like Hindi, Hangul (used to represent Korean) is classified as an alphasyllabic script. Hangul differs from the alphasyllabic scripts used in India in three ways: 1) It provides unambiguous visuospatial cues for syllable boundaries as multisyllabic words are literally configured in syllable blocks. 2) Within each syllabic block, phonemes are indicated in terms of their relative position in the block. 3) Syllabic blocks are required to have a consonant in the initial position. To represent syllables that begin with a vowel sound, a dummy consonant symbol “ㅇ” is required to occupy the initial position. These characteristics of Hangul orthography make it possible for bisyllabic CVC:VC or CVCC:VC words to contain a consonant that is written in the first syllable block but that on the spoken level may be perceived as being in the second syllable [see illustration in Fig. 1].

RESEARCH QUESTION

When judging what is the “first sound” of Korean bisyllabic words containing a mixmatch in orthography and sound, would Korean literate adults’ knowledge of orthographic conventions override judgments based solely on the sound of the word?

HYPOTHESIS

Orthographic knowledge will override sound as the basis for sound segmentation in Korean, particularly for actual words relative to pseudowords. Furthermore, orthographic conventions will lead participants to segment bisyllabic words differently depending on their syllable structure: words written as CVCC:VC will tend to be heard as CVC:CVC whereas those written as CVC:VC will be heard as CV.CVC.

METHOD

Participants: Fifty-two Korean literate, Korean native-speaking adults with self-reported average proficiency of 7 for Korean on a 7 pt scale.

Procedure: Participants first completed a language background questionnaire. They then heard a set of syllabic stimuli in Korean. On hearing each item they were instructed to “drop the first sound and say what remains.”

Stimulus Type

► Lexical status. In order to investigate how participants’ orthographic knowledge would influence their segmentation choices, both words and non-words were presented. Non-words were created in phonologically and orthographically permissible form, following conventions of Hangul.

► Syllable Structure. All stimuli contained two syllable blocks. The first one included CVC and CVCC syllable structures; the second block was always VC but was written, by convention, using the dummy consonant symbol.

RESULTS

Words vs. Non-words comparison

• Percent deletion of the initial CVC syllable was analysed in an ANOVA as a function of lexical status and stimulus type.

• Although both words and non-words showed an above chance level of orthography-based syllable deletion, the effect was stronger for words than for non-words: F(1, 52)=3.53, p < .05, indicating that knowledge of orthography selectively influenced performance on words; sound deletion for non-words was based more on physical characteristics.

CONCLUSION

Our findings show that knowledge of the orthographic rules of a language determines how speech sounds in that language are perceived. Korean literate adults segmented Korean spoken words largely on the basis of how they are normally written, rather than on the basis of how they sound independently of how they are written.

The findings additionally suggest that for Korean literate adults, the default “first sound” of bisyllabic words has a CVC syllable structure.

More generally, these findings corroborate and extend previous findings that orthographic knowledge shapes phonological awareness.

FUTURE DIRECTIONS

Given the participants’ strong dependence on orthographic knowledge as a basis for sound deletion performance, future work will test whether directing participants’ attention away from properties of the Korean script may reduce their reliance on orthographic knowledge on this task.

KEY REFERENCES


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Orthography Affects How Sounds are Segmented: Evidence from Korean Literate Adults

Single vs. Double consonant comparison

• Although orthography-based CVC syllable deletion was found for both stimulus types, the effect was stronger for CVC-initial items than for CVCC-initial items: F(1, 52)=29.04, p < .001.

• Consistent with our hypothesis, the second consonant of the compound consonant tended to be perceived as migrating to the second syllable block.