Testing the Cue-Weighting Transfer Hypothesis with Korean listeners' perception of English lexical stress

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This study investigates whether listeners' use of prosodic cues to lexical contrasts can transfer from the processing of one phonological phenomenon in the native (i.e., first) language (L1) to the processing of another phonological phenomenon in a second language (L2). Theories of L2 lexical stress processing fall into one of two approaches. The phonological approach (e.g., Stress Parameter Model) predicts that listeners' ability to process lexical stress in the L2 is determined by whether listeners encode lexical stress in their L1 phonological representations [1,2]. By contrast, the phonetic approach (e.g., Cue-Weighting Transfer Hypothesis) predicts that listeners' ability to process lexical stress in the L2 is determined by the degree to which the acoustic cues to lexical stress in the L2 signal lexical contrasts in the L1 [3,4,5].

The present study provides another test of these theories by investigating how Gyeongsang Korean (GK) and Seoul Korean (SK) listeners process English lexical stress contrasts realized with suprasegmental cues. GK does not have lexical stress or lexical tones, but it has lexical pitch accents, with fundamental frequency (F0) serving as the main cue to pitch accent contrasts [6]. SK does not have lexical pitch accents, neither does it have lexical stress or lexical tones [7]. The phonological approach predicts that the two groups should not differ in their processing of English lexical stress contrasts, as neither dialect of Korean has lexical stress. By contrast, the phonetic approach predicts that GK listeners should outperform SK listeners in the processing of lexical stress contrasts when these contrasts are realized with suprasegmental cues in English.

SK (n=29) and GK (n=28) L2 learners of English who were matched in English proficiency and native English listeners (n=21) completed a sequence-recall task with English words. The experimental stimuli were minimal pairs that differed in their lexical stress pattern (*OFFset* vs. *offSET*), and the control stimuli were minimal pairs that differed in their initial consonant (*table* vs. *cable*). The stimuli were recorded by one female and one male native speaker of American English. For each type of contrast, participants first completed an association phase, in which they learned to associate keys 1 and 2 with the two English words that differed suprasegmentally or segmentally. Participants then completed the corresponding testing phase in which they were asked to recall four-item sequences of English words that differed suprasegmentally or segmentally. The first and third item in the sequences were spoken by the male, and the second and fourth item by the female; three different realizations of each word were heard throughout the experiment, and all tokens differed within a given sequence.

Listeners' accuracy (Fig. 1) was analyzed with mixed-effect logistics models (Table 1). The model with English listeners' perception of stress contrasts as baseline yielded a significant interaction between L1 and contrast type for GK listeners, but not for SK listeners, with the effect of contrast type being smaller for GK listeners than for English listeners but similar for SK and English listeners. The releveled model with GK as baseline also showed a significant interaction between L1 and contrast type for SK listeners, with the effect of contrast type being greater for SK listeners than for GK listeners. The simple effects of L1 confirm that English and SK listeners showed lower accuracy than GK listeners in the stress contrast condition, with English and SK listeners not differing from each other. English listeners' low accuracy is attributed to the absence of vowel quality cues in the stimuli [3]. GK listeners' advantage over SK listeners in the stress

contrast condition suggests that L2 learners can transfer the use of prosodic cues from one phonological phenomenon (lexical pitch accents) in the L1 to another phonological phenomenon (lexical stress) in the L2, providing robust evidence for the phonetic approach to the processing of lexical stress.

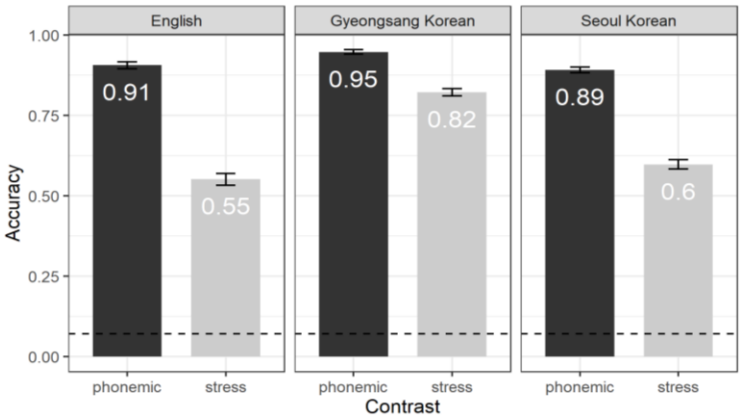

Figure 1. Mean accuracy in the sequence recall task (the dotted line indicates chance-level performance)

Table 1. Mixed-effect logistics models on accuracy in the sequence recall task

Fixed effects	Est.	SE	*z* value	*Pr*(>|z|)	
(Intercept): *English, stress contrast*	0.175	0.231	0.759	.448	
L1 (GK)	1.551	0.220	7.050	< .001	***
L1 (SK)	0.291	0.213	1.368	.171	
CONTRAST TYPE (phonemic)	2.259	0.196	11.56	< .001	***
L1 (GK) × CONTRAST TYPE (phonemic)	–0.818	0.205	–3.985	< .001	***
L1 (SK) × CONTRAST TYPE (phonemic)	–0.297	0.180	–1.648	.099	
Fixed effects	Est.	SE	*z* value	*Pr*(>|z|)	
(Intercept): *GK, stress contrast*	1.726	0.223	7.732	< .001	***
L1 (English)	–1.551	0.220	–7.046	< .001	***
L1 (SK)	–1.260	0.204	–6.175	< .001	***
CONTRAST TYPE (phonemic)	1.441	0.207	6.979	< .001	***
L1 (English) × CONTRAST TYPE (phonemic)	0.818	0.205	3.985	< .001	***
L1 (SK) × CONTRAST TYPE (phonemic)	0.521	0.193	2.707	.007	**

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