

Phonetic development of English stress production and perception by EFL and ESL Korean speakers

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L2 learners of English are known to experience significant challenges in acquiring native-like perception and production [1,2]. L2 learners may employ different strategies to perceive and produce English stress from native speakers as previous studies reported that Korean learners used pitch more than intensity and duration to realize English stress unlike native speakers [3]. This study examines the development patterns of English stress by Korean learners to investigate how their strategies for English stress production and perception are different depending on their proficiency level and learning environment.

Phonetic experiments were designed to compare the weights of the three suprasegmental cues used to perceive and produce English stress: intensity, duration, and pitch, among three groups of L2 learners: mid/high level EFL and ESL. In the production experiment, we recorded the three groups of 36 Korean speakers and one group of 6 English native speakers, each of whom produced 33 English words twice (without and with stress marking on the words). One stressed vowel and one unstressed vowel were segmented from each word and measured to obtain the values of three acoustic cues. In the perception experiment, two bisyllabic nonce words were modulated into five steps of each acoustic cues. The participants listened to each token and asked to choose between initial and final stresses. Unlike the previous studies, the values in the production experiment and the choices in the perception experiment were subject to primary component analysis to reveal which acoustic cue explains the participants' subconscious production and perception of English vowels. Production results revealed that Korean speakers make most use of duration unconsciously and of pitch consciously, while native speakers rely most on intensity irrespective of condition (see Table 1). ESL speakers were more like native speakers in that the weight of pitch was much lighter than the other two Korean groups (see Figure 1). However, all the Korean speakers tended to emphasize pitch when they intended to give stress. In the perception experiment, pitch and intensity best accounted for the native and ESL speakers' choices for initial stress, which was followed by duration. In contrast, pitch alone was the most important acoustic cue that was responsible for the EFL speakers' choice for initial stress (see Table 2). For final stress, duration was the most reliable acoustic cue for Korean speakers, while intensity was for native speakers.

All the results suggest that Korean learners of English mainly adopt pitch to realize and recognize English stress. EFL speakers did not differ depending on their levels, but ESL speakers showed they had learned to make more use of intensity, as native speakers do. The results indicate that learning environment should significantly affect the perception and the phonetic realization of English stress. Also, the results indicate that perception and production do not go in parallel in L2 learning.

Table 1. Primary Cues for Production

	Without Stress Marking	With Stress Marking
Mid Level EFL	Duration > Intensity > Pitch	Pitch > Duration > Intensity
High Level EFL	Duration > Intensity > Pitch	Pitch > Intensity > Duration
ESL	Intensity = Duration > Pitch	Pitch > Duration > Intensity
Native	Intensity > Duration > Pitch	Intensity > Duration > Pitch

Table 2. Primary Cues for Perception

	Initial Response	Final Response
Mid Level EFL	Pitch > Intensity > Duration	Duration > Pitch > Intensity
High Level EFL	Pitch > Intensity > Duration	Duration > Pitch > Intensity
ESL	Pitch = Intensity > Duration	Duration > Pitch > Intensity
Native	Pitch = Intensity > Duration	Intensity > Duration > Pitch

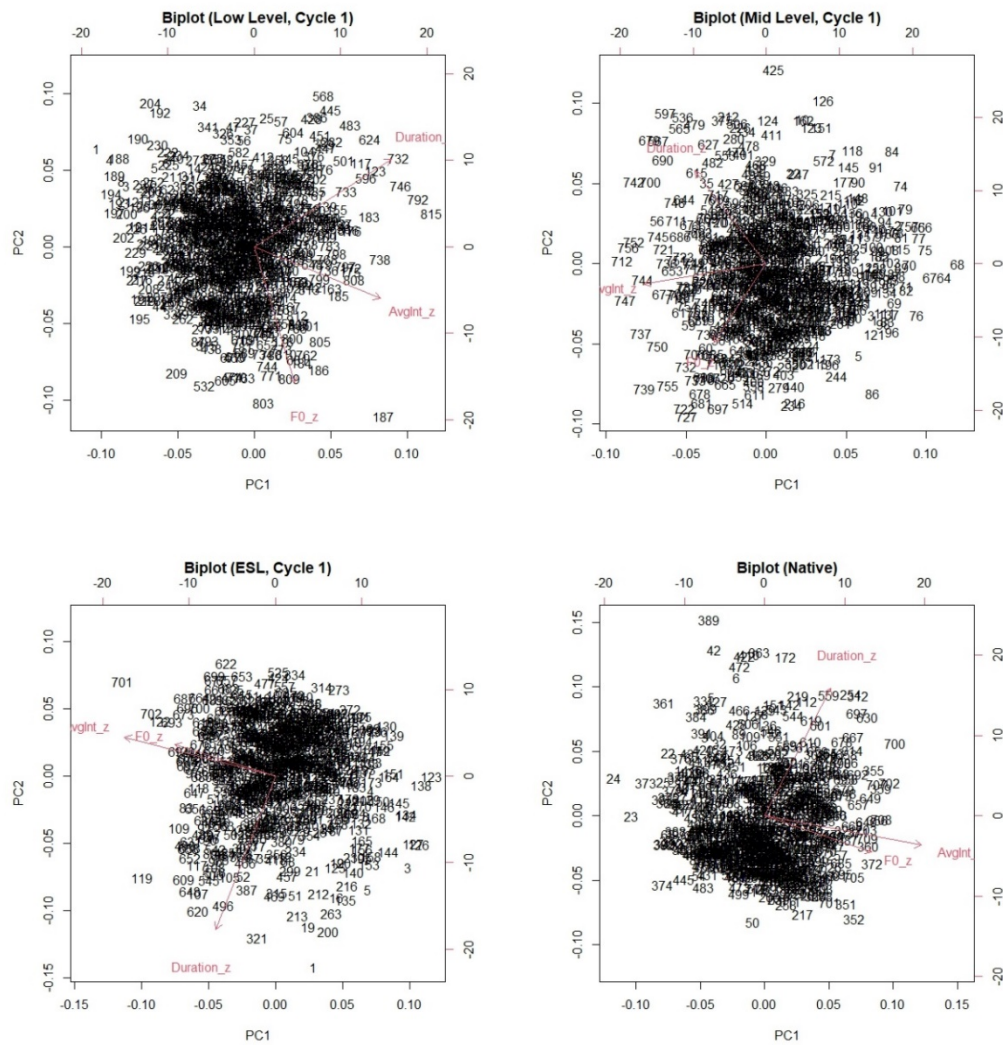


Fig.1 Biplots of PCA for low level, mid level, ESL, and native groups

References

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