TACKLING TALKER VARIABILITY IN SECOND LANGUAGE SPEECH PERCEPTION: THE ROLE OF LEXICAL FREQUENCY AND INDIVIDUAL DIFFERENCES

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Accurately perceiving non-native speech sounds is a major challenge for second language (L2) learners. Previous studies have identified several factors affecting L2 speech perception, including cross-linguistic influence, age, length of residence, and orthographic effects. Despite this line of research, there is still a need for further investigation of factors related to auditory input. The present study aims to investigate the influence of talker variability and lexical frequency on L2 speech perception, and how these factors interact with individual differences, including working memory, L2 receptive vocabulary knowledge, and L2 proficiency.

To this end, 120 Korean learners of English participated in a series of experiments. Using 28 English words (14 minimal pairs) of varying lexical frequency, the current study targeted the /i/-/ɪ/ vowel contrast in English, which is notoriously difficult for Korean learners of English. Each participant was assigned to one of three AX discrimination tasks (i.e., 40 participants per task). These tasks involved 336 target trials using the same 28 words, presented by 2, 6, or 12 different talkers. Participants also completed forward and backward digit span tasks to measure their working memory capacity and the Lexical Test for Advanced Learners of English (LexTALE) to measure their receptive vocabulary knowledge. Their general English proficiency was assessed using their Test of English for International Communication (TOEIC) scores. Forty-seven native speakers of English also participated in the study as baseline participants.

Results revealed that individuals with higher working memory were better able to discriminate between the two target vowels in the 12-talker condition, suggesting that working memory helps non-native listeners cope with variability in speech. The results also indicated an interplay between working memory and L2 proficiency as well as between working memory and L2 vocabulary size in the discrimination of the non-native vowel contrast. Specifically, proficient L2 learners with higher working memory were less affected by talker variability, while those with lower working memory were significantly impacted by it. This pattern also held for L2 vocabulary size, with only those with low working memory being influenced by talker variability, especially in the 12-talker condition, regardless of their L2 vocabulary size. These findings suggest that individuals with higher working memory, combined with higher L2 proficiency and larger L2 vocabulary size, were better able to overcome talker variability and discriminate between the target vowels more accurately.

Overall, the present study highlights the importance of working memory capacity in L2 speech perception and the role it plays in overcoming the variability induced by multiple talkers. It also emphasizes the interplay between working memory, L2 proficiency, and L2 vocabulary size, showing that a combination of these factors is necessary for effective L2 speech perception. The current study has important implications for L2 speech learning and provides a useful empirical foundation for individualized L2 pronunciation training.