

Title	第二言語音韻知覚における成人の年齢効果に関する研究
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Abstract

This research examined whether language experience in adulthood affects phonetic processing with the goal of examining age-related constraints on changes of speech processing. During early childhood, speech perceptual system is tuned to the ambient language, such that the listener becomes better at discriminating phonemes in their first language (L1). Adults apply the L1-based perceptual system to processes for sounds in second language (L2) (i.e., L1 interference). It was hypothesized that the L1 interference can increase in adulthood due to increasing experience with the L1. The hypothesis was tested with perception of American English /r/-/l/ by native speakers of Japanese as a classic example of the L1 interference. Age-related decline in auditory processing, and the L1 interferences were examined as possible factors that are likely to contribute to perception of the phonemes.

First, the contribution of age-related decline in auditory processing to perception of the L2 phonemes was examined. By listening tests and acoustic analysis, temporal and spectral differences of acoustic features were investigated between phonemes which age-related decline in auditory processing affects identification performance, phonemes which the decline do not affects the performance, and the L2 phonemes. The results showed that the acoustic features of the L2 phonemes did not belong to the region where age-related decline affects phoneme identification performance. It allowed us tentatively conclude that the contribution of the age-related decline in auditory processing may have little influence on perceiving and processing acoustic information of the L2 phonemes.

Second, in order to examine the contribution of the L1-based processing, a speech-in-speech masking paradigm was employed. A phoneme identification task in a language was conducted in the presence or absence of an interferer or masker of the same or different language. It was postulated that the degree of interference (i.e., the decrease of identification performance) increases as the similarity of underlying processes for the target and masker increases. The first step was to examine whether the degree of the L1 interference can be estimated from the decrease of the identification performance. The results supported that the decrease of the identification performance can be an indicator of the L1 interference by showing that the decrease of identification performance were dependent on the putative degree of L1 interference. The second step was to examine the decreases of the identification performance with adults from in their 20s to those in their 60s in order to examine differences of the L1 interferences. The results showed that the performances differed among age groups. This implies that perception of /r/-/l/ in initial singleton and initial cluster positions had high L1 interference in older adults.

The findings support the hypothesis that the L1 interference increases with age in adulthood. This implies that language experiences affects processes underlying phonetic perception even in adulthood.

Keywords: Speech perception, Aging effect, Second-language phonetic processing, Influence of first language, Language experience