4aSC10. Formant shift in nasallization of vowels. Takayuki Arai
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We measured the formant shifts of a vowel in the context of a nasal and investigated whether human perception is able to compensate for such shifts. According to the acoustic theory, nasal coupling causes a modification on the spectrum, including formant frequency shift. The first goal of this study is to confirm that the formant frequencies actually shift due to nasalization. Based on several measurements of formant frequencies of various vowels in nasal contexts, we confirmed that the first formant (F1) tends to shift in a more central direction when nasalized. In English, vowels should be perceived as the same phoneme regardless of nasalization. In other words, listeners might have the capability to compensate for such formant shifts. The second goal of this study is to examine this compensation effect by a perceptual experiment. For stimuli, we synthesized a nonnasal vowel V0 that has the same formant frequencies as a nasalized vowel V1. A continuum was also synthesized between V0 and the nonnasalized version of V1. Results show V1 is more correctly identified than V0, which suggests the existence of the compensation effect.