



Consonant-Order Reversals in the McGurk Combination Illusion

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Humans can integrate auditory and visual information when perceiving speech. This is evident in the McGurk effect, in which a presentation of e.g. auditory /aba/ and visual /aga/ leads to the audiovisually fused percept /ada/. With the pairing of auditory /aga/ and visual /aba/, however, the illusion takes the form of a combination percept of either /abga/ or /agba/. Here, we investigated how audiovisual timing influences the perceived order of the consonants in the McGurk combination. Stimuli were recorded with the consonants /g/ and /b/ using vowel-consonant-vowel (VCV) utterances with two syllabic contexts. First, the “internal timing” was studied by articulating the consonant to either emphasize the closing phase (VC-V) or the opening phase (V-CV). This produced cross-modally asynchronous consonants while maintaining synchrony of the vowels. Auditory /ag_a/ dubbed onto visual /a_ba/ was mostly heard as /agba/ whereas auditory /a_ga/ dubbed onto visual /ab_a/ was mostly heard as /abga/. Hence, syllabic context largely determined the perceived consonant order. Second, the effect of audiovisual stimulus onset asynchrony (SOA) was examined at five different SOAs, ranging from 200 ms auditory lead to 200 ms visual lead. The results showed no effect on the perceived consonant order but audiovisual SOAs influenced the strength of the illusion. Furthermore, we found that the window of integration is highly asymmetric for combination illusions and that the direction of the asymmetry depends on the perceived consonant order. We interpret the results as indicative of feature based audiovisual integration where formant transitions and aspirations are integrated separately.

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