The more you hear, the more you know: vowel perception in simultaneous bilingual and monolingual speakers of English and French.

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Speech perception of monolingual speakers (native speakers of one language) is quite well understood, however, how simultaneous bilinguals (native speakers of two languages) face this task raises plenty of new questions. The most traditional approach aiming to understand bilingual perceivers is through the question of whether bilinguals rely on one or two distinct perceptual systems, which question assumes that the number of systems acquired shapes bilingual speech perception primarily. However, in our view, it is the overall acoustic and phonetic properties of the two (or sometimes even more) languages that create the bilingual perceptual space.

An effective way of investigating how these properties affect the bilingual perceptual space is through online measurements of speech discrimination abilities of monolinguals and bilingual speakers as reflected by the mismatch negativity (MMN). MMN responses reflect whether language users have developed long-term memory traces in response to native speech sounds (phonemes) and whether they are able to perceive small acoustic changes within speech sound categories. Subtle acoustic changes within phonemes are often irrelevant to monolingual perceivers but can be crucial for bilingual perceivers if the acoustic change differentiates the phonemes of their two languages.

We designed a MMN study to investigate whether bilinguals are sensitive to such acoustic changes in the speech signal. In line with previous behavioral and electrophysiological findings, monolingual speakers were more sensitive to the phonemic status of the vowels than the acoustic properties differentiating the sounds; however, bilingual speakers were better and faster in discriminating speech sounds regardless of their phonemic/acoustic status. These results suggest that bilingual speakers exhibit a more flexible and less uniquely specified perceptual pattern compared to monolingual speakers, and that being exposed to a complex speech input from birth facilitates highly proficient speech perception abilities in adulthood.