

Perceptual speaker discrimination based on German consonants

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Nasal and fricative consonants appear to contain high amounts of speaker-specific information in their acoustics (Mook & Draxler 2012, Schindler & Draxler 2013) as well as in their perception (Andic 2013). The goal of the present study was to explore in more detail and with a larger set of consonants whether listeners' ability to perceptually discriminate between speakers depends on the types of consonants they hear and whether this pattern would match the acoustic analyses.

Participants performed a same-different speaker discrimination task with nonsense words (aCa). Consonants were nasals, fricatives, and stops, each in labial and alveolar place of articulation (i.e., /m/, /n/, /f/, /s/, /p/, /t/). Trials were blocked by consonant and presented in randomised order. The pitch contour was flattened and normalised, and the vowels shortened to 50 ms on each side to lower the accuracy rate and raise the degree of separation between the consonants. In a first experiment overall accuracy rate was 0.83. There were differences between the consonants with alveolar consonants showing overall higher accuracy rates than labials. In a second experiment the consonants were spliced into an identical vowel context for all speakers, so that the listeners could not use the vowel information to discriminate between the speakers. Mean accuracy rate now dropped to 0.62. Again, we found differences between the consonants, although the pattern with regard to place of articulation differed. Implications for the role of consonantal information in speaker discrimination will be discussed.