Developmental factors in the identification of place of articulation

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This study is concerned with developmental trends in the identification of place of articulation for nasal consonants in French. We asked whether differences arise in how place of nasal articulation is identified, over a five-year period during childhood. Three groups of children took part in the study (40 five-year olds, 20 9-year olds and 20 10-year olds). The stimuli ranged on a 6-step /ma/-/na/ continuum. The two endpoints of this continuum were natural utterances previously recorded by a male native speaker of French. The initial consonants were made equal in duration. The intermediate stimuli were then generated by adding the waveforms of the endpoint stimuli in varying proportions, increasing the amplitude of /na/ while decreasing that of /ma/ (Repp, 1981). Preliminary tests with adults showed that, as expected, the endpoint stimuli were clearly identified as /ma/ and /na/, while the intermediate stimuli were perceived as being more ambiguous. The subjects were presented with the stimuli and were asked to categorize them as ‘ma’ or ‘na’ by pointing to either of two pictures. Our results show that the stimuli were identified differently depending on the age of the children. Five-year-old children had difficulties in differentiating the two endpoints, with a percentage of ‘ma’ responses close to 50% in both cases. The older children's response patterns were found to be more categorical and closer to that of the adults. Implications of these results for theories of speech acquisition, and more particularly the Perceptual Magnet Theory, as proposed by Kuhl, will be discussed.