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Categorically perceiving vs. Categorizing while perceiving: The role of segments' recognition and lexical access while categorizing the pragmatic function of pitch movements in speech.

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Speech perception studies have highlighted: i) auditory-articulatory mapping processes; ii) Categorical Perception (CP) (Liberman et al., 1967); iii) bottom-up formation of phonological categories through statistical learning; iv) top-down mechanisms shaping the perceptual space (Kuhl et al., 1992). Among several open questions, we focus on: i) the relation between speech perception features and other aspects of cognition involving categorization (Holt Lotto,2010); ii) the cognitive mechanisms responsible for pitch categorization and discrimination in linguistic and non-linguistic contexts.

Pitch in speech is organized in phonological categories (Pitch Accents, Boundary Tones (BTs)) aligned to the text and conveys syntactic, semantic, and pragmatic information (Ladd, 1996). Perception of BTs has been found Quasi-Categorical (Schneider, 2012).

We investigated the presence of CP of BTs (Rising vs. Descending final contours) discriminating between questions and statements. In Italian, intonation alone can distinguish the two. We adopted a modified version of the CP paradigm and tested 34 participants in 2 groups, varying the linguistic segmental information. Group 1 saw: 1) existing words; 2) pseudowords; 3) pseudowords containing foreign phonemes; 4) masked segmental information (humming). Group 2 the reverse order.

Our results show that the pragmatic interpretation of the pitch contour is top-down activated and accessed on degraded linguistic material when stimuli are presented in the word-to-humming order, and bottom-up created through a categorization process in the humming-to-word order. The results also show that in absence of recognizable segmental information (humming), pitch shows to be categorized according to its acoustic properties, rather than on its function in speech.

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