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Impaired phonological processing of lexical tones in Cantonese speakers with congenital amusia

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Abstract: Congenital amusia is a lifelong musical disorder. It has been found that tonal-language speakers with amusia are impaired in lexical tone perception. But it has also been found that tonal-language experience compensates the deficit in certain scenario, reducing prevalence rate of amusia in speakers of a highly complex tonal-language – Cantonese. Thus it remains unclear whether lexical tone perception, especially its phonological processing, is impaired in Cantonese-speaking amusics. This study investigated the categorical perception of a continuum of lexical tone stimuli and pure tone analogues in Cantonese-speaking amusics and controls. The amusics showed reduced discrimination peak across the categorical boundary compared to controls in lexical tone condition, suggesting impaired categorical perception; in pure tone condition, the amusics showed inferior performance on both between- and within-category discriminations, suggesting a deficit in auditory pitch processing. These findings indicate that phonological processing of tone is impaired in Cantonese-speaking amusics, despite possible compensation effect.