



## Singing out of tune: Disturbances of music performance

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Singing is a universal form of vocal expression which transcends places and cultures. The ability to carry a tune emerges precociously during development. In addition, singing is a socially-relevant behavior typically observed in a group context. Thus, singing appears as deeply rooted in our biology. Singing should be as natural as speaking. Curiously, evidence is scant about nonmusicians' singing proficiency. I will describe findings from recent studies on singing proficiency of normal individuals, patients with congenital amusia (i.e., tone-deafness), and patients with nonfluent aphasia. Singing proficiency was examined with acoustically-based methods. These findings indicate that the majority of normal individuals can sing with remarkable proficiency. However, not everybody can carry a tune. Cases of poor singing (e.g., involving pitch or rhythm processing) consequent to developmental disorders or brain damage, both in presence or absence of perceptual deficits, were reported. This points to the existence of neural networks underling singing proficiency which are relatively separate from perceptual areas, and which may not properly develop or be selectively damaged by brain insult.

