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**Singing out of tune: Disturbances of vocal performance in the
general population**

Simone Dalla Bella

Dept. of Cognitive Psychology, University of Finance and Management in Warsaw, Pawia Street 55, 01-030
Warsaw, Poland

Acoustical methods can provide a reliable and objective estimate of singing proficiency in the general population, in terms of pitch and temporal accuracy (e.g., Dalla Bella, Giguère, & Peretz, 2007). The majority, when asked to sing a well-known song at a slow tempo, are as proficient as professional singers. Nonetheless, some nonmusicians exhibit poor singing. This deficit is mostly limited to the pitch domain and sometimes is not accompanied by impaired perception. More recently singing proficiency was examined in nonmusicians with tasks extending beyond singing familiar melodies. Forty participants imitated single pitches, intervals, and short melodies; in addition, participants sang three well-known melodies at a spontaneous tempo and at a fixed slow tempo. Additional tasks (e.g., Montreal Battery of the Evaluation of Amusia) were carried out to assess participants' perceptual abilities. Acoustical analyses of vocal performance revealed that the majority of nonmusicians sang in tune and in time, thus confirming previous findings. Still, various patterns of poor singing emerged from the analyses of pitch and time accuracy (e.g., poor pitch singing with or without perceptual deficits). The relationship between perception and performance mechanisms in vocal production will be discussed.