Effects of Key Membership and Interval Size in Perceiving Wrong Notes.

Rachna Raman and W. Jay Dowling

The University of Texas at Dallas

Abstract

Previous investigations showed that Western participants' perception of wrong notes in familiar Western melodies was influenced by both key membership (diatonic or nondiatonic) and interval size (1 or 2 semitones away from the original note), with stronger effects of key membership (APCAM, 2008). In this study, we examined differences among South Indian classical (Carnātic) music teachers', students', and aficionados' perception of wrong notes in familiar Carnātic and Western music. Participants first rated melodies for familiarity from which we chose a subset of six Carnātic and six Western melodies highly familiar to them. Each of these melodies contained one of eight types of wrong note based on key membership, interval size, and direction (up or down from the original note). Participants identified the wrong note in each melody by pressing a key. The results indicated that overall teachers recognized wrong notes faster than students, who in turn were faster than aficionados. All groups were faster with Western melodies. Both key membership and interval size influenced perception of wrong notes in Carnātic melodies: Participants were slowest at recognizing wrong notes that were diatonic and one semitone away, and fastest when they were nondiatonic and two semitones away. These results reflect the global complexity of the Carnātic music system which has over 350 modes in current use. Also, due to the nature of the music, participants probably heard diatonic pitches one semitone away as "choices" rather than as wrong notes. Only interval size was important in perception of wrong notes in Western music: Participants were slower when wrong notes were one semitone away, and faster when they were two semitones away. A second experiment is underway to ascertain

differences between Carnātic and Western participants' perception of wrong notes in the same

six Western melodies.