

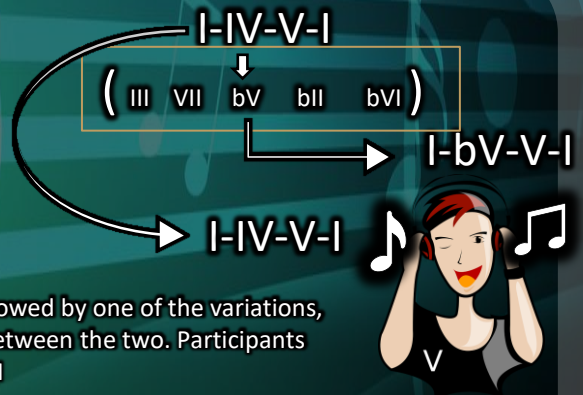


Background

- By 7 years of age, children and adults are similar in their ability to discriminate out-of-harmony vs. within-harmony changes (Trainor & Trehub, 1994), and display quicker and more accurate judgements for progressions resolving on tonics as opposed to subdominant chords (Schellenberg et al., 2005).
- Harmonic priming of related chords is thought to be driving increased accuracy and response times (Bharucha, 1987). Though this facilitation effect is greater in musicians, it is also observed in non-musicians (Bigand & Poulin-Charronnat).
- **Research Aims:** Configure a rule-based paradigm to examine the individual differences in harmony perception. Initial round of testing collects data in order to calibrate test and difficulty scale. Final test should be adaptive, with questions becoming more or less difficult based on previous responses.

Methods

- Algorithm extracts the 36 most frequent four-chord triad sequences from #1 Billboard Corpus 1958-1991
- Sequences are modified with one chord substituted in the progression. This is done for each chord in the sequence, covering every major, minor, diminished, and augmented chord for a total of 141 variations of each of the 36 progressions
- Participants are presented with the original progression followed by one of the variations, and are tasked with selecting the chord which is different between the two. Participants also complete the Musical Training subscale of the Gold-MSI
- Chords in sequences are analyzed with harmonic distance, Milne spectral similarity, and voice leading distance measurements



Results

- Participants were more likely to choose the correct answer when the harmonic distance between target and preceding chord was greater, target chords had greater simultaneous dissonance, and original progression was more familiar
- Participants with higher scores of musical training were more likely to correctly identify target chords. Small correlation observed between random effects and Gold-MSI musical training score
 - Findings support Bharucha's idea of harmonic priming, such that related chords are more easily processed than unrelated chords. In this case, the difficulty of processing unrelated chords facilitates judgement accuracy for altered chords
- General linear mixed-effect model (n = 6513, BIC = 6938.3, accuracy 77.2%)
- R = 0.148