

Future directions for musical imagery development: Contributions from pedagogy and cognitive science

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In this talk, I integrate scholarship from aural skills pedagogy and cognitive science to advance both the study and practice of musical imagery development. I propose that musical imagery as developed in North American aural skills pedagogical approaches is a form of expert memory, or long-term working memory (LTWM, Ericsson & Kintsch, 1995; Ericsson, 2018). My analysis of the literature shows that pedagogical methods discussed by scholars in the North American tradition can be divided into four discrete categories each with their own distinct function in expertise acquisition. These include schema/chunk formation, semantic encoding, construction of retrieval cues and retrieval structures, and the gradual improvement of

memory skill (or LTWM formation). I also integrate insights from auditory imagery psychometrics (Halpern, 2015) through a mapping of imagery processes (generation, manipulation) and their corresponding subjectively available properties (perceived vividness, control) onto the established LTWM framework. To conclude, I introduce my recent work operationalizing musical imagery LTWM as a form of multimodal dual-coding fluency (Paivio, 2007).

KEYWORDS: *musical imagery, expertise, long-term working memory, dual-coding theory*

Electrophysiological Correlates of Style-Based Harmonic Expectation

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Previous research on the effect of musical style on harmonic expectancy indicates that listeners are differentially sensitive to certain chord progressions depending on the stylistic context in which they are presented (Vuvan & Hughes, 2019). Despite this, there is little research on the neural basis of listener expectation as a function of musical style. The current study focused on the event related potential known as the early anterior negativity (EAN, Loui et al., 2009), which has been shown to be correlated with perception of musical syntax violations. Trials were blocked by style (Classical, Rock), and contained a four bar-long

excerpt ending in either a V-I or a bVII-I cadence. We hypothesized that the bVII-I cadence would evoke an EAN in the classical context, where it is unexpected, but not the rock context, where it is expected. Preliminary data seems to confirm this hypothesis, providing evidence for the effect of musical style on the early non-conscious neural processing of harmonic syntax.

KEYWORDS: *musical style, event-related potentials, early anterior negativity, harmony, expectancy, rock, classical, popular music*

How learned schema influence melodic phrase perception

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Music across genres comprises of specialized schemas at both large and small scales. In the case of Indian art music, musical phrases form categories as defined in the melodic framework of the raga. The phrases, defined by their melodic shapes or time-pitch contours, are salient cues to raga identity and the associated semantics such as affect. The semantic-cognitive association of the raga-characteristic motifs, linked to long-term memory for trained musicians, makes them akin to linguistic constructs. We present a corpus study of melodic phrase shape as a cue to raga identity to illustrate the invariance of certain aspects such as rhythmic timing and non-standard intonation of specific notes in the presence of the overall context-dependent variability of the given

phrase. A perceptual experiment paradigm is drawn from speech perception studies where the categorical perception of acoustic phenomena influence judgements of similarity. While tonal intervals and chords have been part of categorical perception studies in music, there is no similar work involving continuous melodic shape. Synthetic stimuli representing the melodic shape are used to elicit distinctly different behaviors between participants highly trained in the genre and those who are not similarly trained. This raises the potential of the presented work for applications in pedagogy.

KEYWORDS: *categorical perception, raga phrase, melodic shape*