

Real-Time Modulation Perception in Western Classical Music

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The auditory scene analysis performed during music listening is an incredibly complex process. The task of listening involves the listener making many judgments per second. Those judgments relate to melody, timing, and key or tonic region. Previous work such by Krumhansl & Kessler (1982), Toiviainen & Snyder (2003), and Raman & Dowling (2017) have explored listener responses to music using a probe-tone method, which may or may not interfere with the fundamental listening task by creating an auditory reference point against which to compare the auditory scene. This work raises the question as to whether or not listeners are aware of key area independent of that auditory reference pitch. Here I use ecologically valid stimuli to examine whether the process of tracking key region is independent of the process of tracking surface cues, and what surface cues may influence that process. To this end, highly-trained, moderately-trained, and untrained listeners were asked to respond to excerpts from string quartets, quintets, and sextets from the classical and romantic eras and react when and if they heard a modulation. Each excerpt featured either a pivot chord modulation, a direct modulation, a common tone modulation, or no modulation. Responses were analyzed using A' and reaction time. Evidence is provided that listeners perform above chance across all training levels and modulation conditions. Significant main effects of training and modulation type are found, as are significant interaction effects. Modulation type and mode change, as well as participant training level are significant factors in overall accuracy.