

MUSICAL STRUCTURE, LISTENER ORIENTATION, AND TIME PERCEPTION

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Background

Jones and Boltz (1989, 1993) proposed that a clear musical structure helps listeners predict future musical events and hence accurately perceive musical time. According to Fraisse (1963) and Ornstein (1969), poorly structured stimuli contain more perceptual elements and therefore seem to last longer.

Aims

Jones' and Boltz's experiments focussed on synthesized melodic fragments. We investigated whether their finding generalises to real music (excerpts from commercially available CDs) and musically typical durations (longer than a few seconds).

Method

In Experiment 1, 15 listeners of mixed musical background heard 20 musical excerpts and rated their predictability, variability, closure, tempo, pleasantness and familiarity, as well as their own musical experience and their arousal and attention during the experiment. They also estimated the duration of each excerpt in seconds. Stimuli included examples of minimalism, classicism, atonality, jazz and non-western music. Each listener heard the excerpts in a different random order. Experiment 2 was identical except that the musical excerpts were played for 3 minutes instead of 30 seconds, and a new group of listeners participated. In neither experiment did any listener guess that all excerpts had the same duration.

Results

Jones and Boltz predict that duration estimates are most accurate for highly predictable excerpts. Our listeners' estimates were most accurate for medium predictability (and medium variability). Fraisse and Ornstein predict overestimation of duration for unpredictable excerpts. Listeners of our Expt. 1 (30 s) tended to underestimate, of Expt. 2 (3 min) to overestimate duration.

Conclusions

The loss of accuracy for highly structured stimuli may be explained by Berlyne's complexity theory: highly structured stimuli are not necessarily preferred. The idea that accuracy depends on attention, which in turn depends on preference, is not, however, supported by the data, in which there was no correlation between self-appraised attention and perceived duration.