



### **Tempo as a measure of time experience in music**

Perception of musical time and tempo are extremely complex phenomena. This study is based on the premise that tempo is a general cognitive constraint influencing the way we organise long-scale musical events in real time and, thus, make sense of them. Tempo constitutes an important meaning-bearing element of music by enabling various sound events to be woven together at a fixed pace in time. In turn, this temporal pacing is what gives music its unique motional, emotional, and sensuous character, as has been acknowledged in most discussions concerned with music aesthetics, theory and compositional or performance practice.

The present study was designed to examine whether listeners from different age groups (30 adults, 30 adolescents and 30 preadolescents) and musical backgrounds (musicians and non-musicians) can set tempi in a consistent manner over an extended period of time, and in actual musical contexts which represent a wide range of styles, familiarity and potential preference.

Subjects heard the same six compositions on four separate occasions. Each session systematically varied the order of the presentation and the initial tempo of the examples. Each was recorded digitally and performed in real time with a computer controlling a MIDI synthesiser. Subjects were asked to listen to each piece and indicate whether the experimenter should set the tempo faster or slower until it sounded right to them.

Results of repeated measures ANOVAs indicated that the initial tempo significantly dominated subjects' right tempo judgements: the slower initial tempo generally evoked slower tempo selections and so on. However, a relatively small number of adults, mostly musicians, were remarkably consistent in their tempo judgements across all four trials. It appeared that these individuals possess an exceptional ability with respect to acute stability of large-scale timing in music that was labelled absolute tempo.

There was also evidence that the degree of consistency in right tempo judgements gradually increased from preadolescence through adulthood. Few statistically significant differences in consistency of tempo judgements were found as a result of musical background. Findings strongly suggested that the compositional style of musical examples influenced the degree of tempo consistency across trials. Moreover, there was statistically significant evidence that an increase of familiarity with the musical examples and the musical styles resulted in an increase of consistency of right tempo judgements. Finally, there was statistically significant evidence that subjects tended to render more consistent tempo judgements for the pieces they like than for the ones they dislike.

I shall conclude the paper with recommendations for music education.