
Visual Processes

Conductors' Gestures: Perception of, and Synchronisation with, Visual Beats

Geoff Luck; Keele University, U.K.

Time: Sun 21 11.30 am, Stream: D

Proc. Page: 638-638

Venue: Room G17, Webster Ground

1. Background

Under certain circumstances, people are able to achieve a high level of synchrony between their movements and those of another individual or object. The level of coordination achieved will be affected by various factors, such as the relative phasing of the movements, the type of motions involved, and the goal of, or reason for the attempt at synchronicity.

2. Aims

This paper will present data from a series of studies designed to investigate musicians' synchronisation behaviour when attempting to coordinate their performances with various motions, such as they might when playing under a conductor's direction. In addition, various parameters of conductors' gestures, such as velocity, acceleration and trajectory, will be examined in order to identify the features which together characterise a visual 'beat'.

3. Method

The gestures of three conductors (Novice, Amateur, and Professional) were recorded, and used to generate point-light stimuli with which participants were required to synchronise in a tapping task. Gestures included single beats, various beat patterns over several measures, and tempo modulated beat patterns.

4. Results

Results will be presented which show that the level of coordination achievable depends upon the characteristics of a motion's trajectory, including its predictability.

5. Conclusions

The implications of this research suggest that conductors could tailor their gestures to allow musicians to achieve maximum coordination with them. The research programme to be reported will more clearly define these 'best practice' gestures.

Manipulating Working Memory to Improve Sight Reading Skills

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Time: Sun 21 12.00 pm, Stream: D

Proc. Page: 639-642

Venue: Room G17, Webster Ground

This experimental study investigated a new method for the training of sight reading skills that manipulates working memory among several aspects of the music reading process. For this purpose a computer system called *SightReader* was developed by the author for 'stretching' the minimum size of the eye-hand span during music reading. 20 moderately skilled keyboardists were divided into experimental and control groups and given six training sessions on *SightReader*. As they repeatedly played three new stimuli in each session, experimental participants were exposed to a gradually increasing minimum level of span size and control participants to a more traditional regimen of gradually increasing tempo. It was hypothesised that those whose spans were repeatedly stretched during training would show a significantly greater improvement in sight reading accuracy at the end of the trials than those who underwent the control training. The hypothesis was born out for the most difficult class of stimuli, four-part hymn settings, suggesting that such active intervention in the music reading process shows promise as a powerful teaching tool.

Error Patterns in Piano Sight-Reading

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Time: Sun 21 12.30 pm, Stream: D

Proc. Page: 643-646

Venue: Room G17, Webster Ground

This paper aims to show how a theory of error developed from work on errors in everyday behaviour might be applied to errors in musical performance, with a view to explaining errors in both sight-reading and well-practised performance according to the same framework: Reason's (1990) *Generic Error Modelling System* (GEMS).

Preliminary data from a pilot study illustrates how a framework such as GEMS may help categorise errors in terms of aetiology and explain certain elements of systematicity in the data. Specifically, we present some evidence to suggest that rules of harmonic expectation may be relatively weak in comparison with visual pattern-recognition. Limitations of the present study and of the framework in general are discussed.