MAPPING VISUAL ATTENTION OF DUO MUSICIANS DURING REHEARSAL OF TEMPORALLY-AMBIGUOUS MUSIC

Laura Bishop[1], Carlos Cancino-Chacón[1,2], and Werner Goebl[3]*

[1] Austrian Research Institute for Artificial Intelligence, Austria
[2] Department of Computational Perception, Johannes Kepler University Linz, Austria
[3] Department of Music Acoustics, University of Music and Performing Arts Vienna, Austria
* Correspondence: laura.bishop@ofai.at

Background

Small ensembles in the Western classical tradition can usually coordinate their playing without exchanging visual cues. Shared interpretative intentions (partly the result of familiarity with the musical genre and partly the result of rehearsal) and access to each other's sound are mostly sufficient for successful coordination, even if visual contact is not possible. However, in situations where performers' interpretations of the music are less likely to converge (e.g. at piece entries; following abrupt tempo changes; in periods of free meter), visual communication may help with aligning intentions and coordinating output. In such cases, we hypothesize that visual communication serves two functions for ensemble performers: (1) it facilitates coordination by clarifying the performers' intended timing and (2) it enables confirmation of joint attention and understanding.

Aims

This study mapped the course of duo musicians' body gestures and visual attention as they coordinated performances of an unfamiliar, temporally unpredictable piece of music. The aim was to determine under what conditions musicians look at each other (e.g. when certainty of the co-performer's intentions is low), where they focus (e.g. on the face, body, or instrument), and whether coordination improves when visual communication is possible.

Method

Motion capture, eye gaze, and audio recordings were collected as piano and clarinet duos performed several renditions of an unfamiliar piece. The piece had been specially written for the study and included passages in free meter, alternations between specified meters, and periods of contrasting accent patterns in primo and secondo parts. The piece was structured so that it would be challenging for a skilled duo to coordinate (though primo and secondo parts were not very difficult to play individually). The experiment session was conducted like a structured rehearsal: three complete performances were recorded in which two-way visual contact between musicians was possible, including one at the very start of the session, one midway through a period of free practice, and one at the end. A fourth complete performance was then recorded as well, in which musicians were unable to see each other.

Results

Data collection is ongoing, but analysis of eye gaze patterns should show that performers spend more time looking towards each other during periods of high unpredictability, and less time looking towards each other during periods of high predictability. As such, performers should make less use of visual signalling as their familiarity with the music increases. Performers are also expected to look more towards their partner's face than towards any other part of their partner's body or instrument.

Conclusions

Our results should show some parallels to the patterns of visual attention previously observed in the context of linguistic communication, such as increased eye contact during turn-exchanging. A focus on the co-performer's face rather than peripheral body movements—as occurs during communication via sign language—would suggest that monitoring others' attention may aid coordination in unpredictable contexts. Decreased time spent looking towards each other across successive performances will show that reliance on visual signalling declines as performers settle on a shared interpretation and become more certain of each other's intentions.

Keywords

ensemble performance; visual attention; body movement; coordination; visual communication

Acknowledgments

This research is funded by Austrian Science Fund (FWF) grant P29427. We are grateful to Anna Pudziow and Ayrin Moradi for their help with participant recruitment.