The effect of real-time visual feedback on the training of expressive performance skills

David Hoppe1, Alex Brandmeyer1, Makiko Sadakata1, Renee Timmers2, Peter Desain1

1Music Mind Machine Group, NICI, Radboud University Nijmegen, The Netherlands
2Center for History and Analysis of Recorded Music, Music Department, King’s College London, UK

Background
In traditional music education, the teacher usually provides the student with verbal feedback. Two major problems arise from this teaching method. First, verbal feedback is prone to ambiguous interpretation. Second, there exists a time lag between the student’s performance and the teacher’s feedback, this gap in time being the critical learning period of the student. One way of overcoming these problems is providing the music student with real-time visual feedback (RVFB), because it is immediate and unambiguous. The use of RVFB has already been successfully applied in music education, such as singing training and teaching the musical expression of emotion.

Aims
Our primary aim was to investigate the effect of a new type of RVFB, which presents abstract shapes, on learning to imitate short rhythms with expressive variations. Secondly, we address the transferability of rhythm production skills. Finally, we test whether the effect of the training is task-independent, e.g. production training may not only improve motor skills, but also may increase the perceptual sensitivity for timing differences.

Method
We conducted an experiment with a between-subject pretest-posttest design. Twenty-four amateur musicians (13 years of music lessons on average) were divided over two groups, a RVFB group and a control group. RVFB was presented during the training phase. Simple three-interval rhythmic patterns with timing and dynamic variations were used as stimuli. Both production and perception were assessed in a pre- and posttest, the former using an imitation task, the latter in a discrimination task. Participants were trained only on imitating short rhythms with expressive variations.

Results and Conclusions
The experiment and analyses are currently in progress. We expect to find the following: 1) a larger learning effect for the RVFB group than for the control group (effectiveness of the new type of RVFB), 2) improvement of the task performance skill for the rhythms which are not used for the training (transfer-of-learning effect), and 3) improvement in perceptual sensitivity for timing differences as a consequence of the production training (task-independency).

Key words: Real-time visual feedback, Expressive performance, Learning

teeeteebee@gmail.com