

Tracking a vocal group: A pilot study on multiple and simultaneous Eye-Tracking

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ABSTRACT

This pilot study aims to contribute to innovative teaching and rehearsal methods in arts and music education. By measuring oculomotor behavior and deciphering patterns during the learning of composed melodies, teachers' strategies for gaining students' attention and singers' capability to interact as an ensemble may be improved.

KEYWORDS

music, vocal group, masterclass, eye-tracking, ambulatory assessment

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1 BACKGROUND

The proposed study focuses on ensemble singing in the masterclass setting and measures its study endpoints using modern methods like Ambulatory Assessment and Eye-Tracking. Although Eye-Tracking has certainly and repeatedly been used in music didactics so far, its use has mainly focused on the study of reading sheet music. To our knowledge, yet no studies have been published that had used Eye-Tracking in musical ensembles scrutinizing gaze behavior in a three-dimensional space. Nor have ambulatory assessment procedures been used to investigate listeners' learning engagement and attentional distribution in the masterclass setting. Therefore

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the feasibility has to be tested in a pilot study enrolling a limited number of cases.

2 METHOD

The design is based on the general principle of masterclasses encompassing three actor groups: (1) active singers, (2) conductor, and (3) observing singers. All study participants will be equipped with tablets displaying sheet music and questions. During the measurement period, the active singers are guided in singing together according to a semi-standardized rehearsal plan confronting them with musical and didactic sample passages. Questions about the acute perception of the learning situation are displayed in predefined time intervals on the tablets. Scan paths (fixation points) will be categorized in five areas of interest: a) sheet music on the tablet, b) other singers, c) instructor, d) audience, e) other. Based on fixation durations, attention distribution and specific patterns thereof can reveal specific learning situations. By recording each singer, performance quality and interaction effects between singers may be identified. The data will be recorded using Pupil Capture software and analyzed by innovative statistical methods (Hidden Markov Chains).

3 OBJECTIVES

This pilot study focuses on

- technical feasibility of mobile Eye-Tracking glasses to simultaneously measure the gaze behavior of several people in different roles,
- displaying musical notation on tablets with occasional insertion of questions and
- comparison of gaze behavior and attention in active vs. observing singers, as well as its dependence on musical parameters and the instructor's intervention during the master class.

4 FUNDING

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