Deadpan and immobile performance intentions share movement features but not expressive parameters

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ABSTRACT

Background

Musical expression is a multifaceted phenomenon that has traditionally referred to the temporal variations in timing and dynamics occurring in music performance. In addition to such auditory cues, body movement is also indicative of the performer's musical intentionality, and contributes to an observer's perception of musical expression. Because it is perceived visually, body movement is a particularly important channel for communicating musical expression, analogous to paralinguistic gestures found in everyday speech.

Investigations on expressive body movement in music performances have often employed the 'standard paradigm' (Juslin & Timmers, 2010), whereby musicians are asked to perform under conditions of varied emotional and/or expressive intentions. This has been used for instance by Davidson (1993) when exploring the perception of expression across different performance manners. By contrast, Wanderley (2002) investigated whether performing without extraneous movements (immobile) inhibited musicians from reaching their expressive goals, thus hindering the overall performance. In an experiment that synthesized Davidson's and Wanderley's performance manners, Thompson & Luck (2012) investigated the differences between the immobile and deadpan conditions. They found that pianists employed similar amounts of movement in the deadpan and immobile conditions, but with very different timing profiles: the timing profile for the immobile condition closely resembled that of a 'normally' performed rendition while the deadpan showed muted timing variation. The current study expands the investigation of the seemingly inherent association between expressivity and movement to clarinet performance.

Aims

The aim of this study is to examine the similarities and differences between performing a musical excerpt in an expressively nuanced fashion (deadpan) with performing without the use of extraneous movements (immobile). Channels of expressivity (timing, dynamics, physical movement) within piano and clarinet performances were quantified and compared. This abstract presents preliminary and descriptive results for timing, dynamics and physical movement.

Method

Performers: Pianists (total number = 10) recruited from the University of Jyväskylä and McGill University performed Chopin Prelude in E minor Op. 28 # 4 and the first movement (Promenade) from Mussorgsky's Pictures at an Exhibition. Clarinetists (total number = 4), recruited from McGill University, performed excerpts from Brahms Sonata No. 1 in F minor, Op. 120 (*Allegro appassionato*) and Mozart's Clarinet concerto in A major, K. 622 (*Allegro*). The musicians performed the pieces 12 times each, by cycling three times through four performance conditions (deadpan, normal, exaggerated and immobile).

Apparatus and procedure: Reflective markers were attached to the musicians' bodies and their movements were motion-captured at a frame rate of 120 Hz. Timing information (the timing onset of each measure) was derived through manual segmentation of the sessions' audio recordings. The durations of each segment served as reference points when applying a nonlinear time-warping algorithm to the movement data. Time warping was important as it allowed for the temporal alignment of the different performances. Following this, the total amount of movement per measure was calculated for each performance. In addition, the dynamic range of each audio segment was determined by calculating its root mean square (RMS). This value was used to observe differences in dynamic range across performance conditions.

Results

Figures 1 and 2 demonstrate some preliminary findings when comparing the timing profiles and quantity of movement in the pianist and clarinet performances. The results of the dynamics will be shown in the presentation.
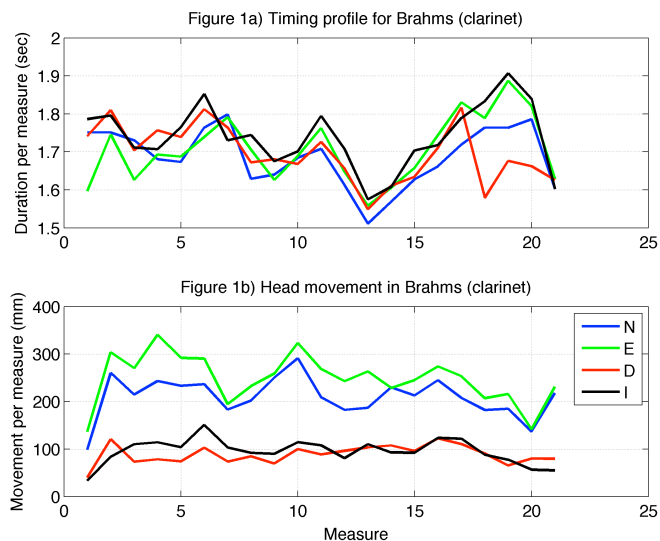
Figure 1. a) Averaged timing profiles for the Brahms Sonata excerpt (clarinet). b) Averaged head movement per measure for Brahms Sonata excerpt (clarinet). N=normal, E=exaggerated, D=deadpan, I=immobile.

Expressive timing: Figure 1a represents the average timing profiles in the clarinet Brahms excerpt for each performance condition. Figure 2a shows the same for the Chopin piano excerpt. In both figures, the timing profiles appear to be similar across all performance conditions. In fact in Figure 1a, the immobile (I) condition's trajectory is quite similar to the exaggerated (E) condition. Figure 2a shows that the immobile (I) condition's timing follows closely the

normal performance (N) with the deadpan (D) condition showing the least amount of variation.
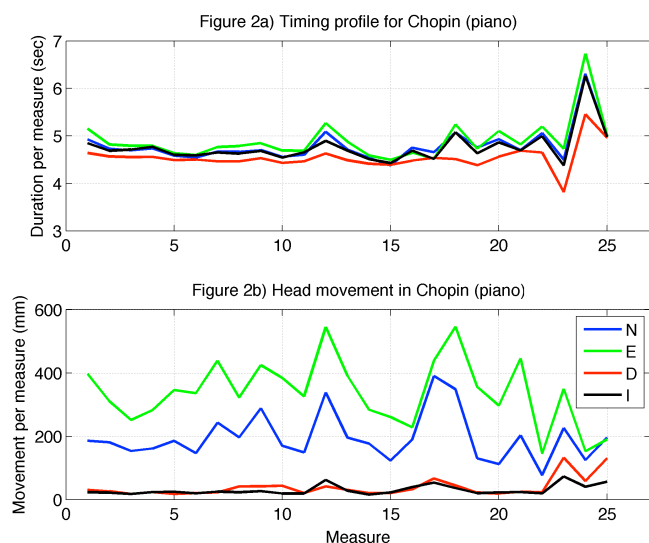
Figure 2. a) Averaged timing profiles for the Chopin Prelude excerpt (piano). b) Averaged head movement per measure for the Chopin Prelude excerpt (piano).

Amount of movement per measure: Using the time-warped data, the total distance per measure was calculated and averaged across participants for each performance condition. Figure 1b and Figure 2b show the results for each performance condition for the head (center of four head markers). For both the piano and clarinet performances, the figures demonstrate that the deadpan (D) condition and immobile (I) conditions included small variation in head motion. This is a stark contrast to the normal (N) and exaggerated (E) conditions, which show much variation and bursts of motion at different sections of the musical excerpt.

Conclusions

This study presents evidence that deadpan and immobile conditions are related according to the amount of physical movement used, but not in terms of other expressive parameters (timing). Expressive movements in performance serve various purposes. Among these purposes is the idea that gestures are embedded in musicians' motor programs and help in preserving the musician's sense of global timing while performing (such is the case for body sway). While this may be true in some cases, the current study shows that across musicians and different pieces, musicians were able to suppress extraneous movements such as swaying and gesturing while maintaining an expressive timing profile similar to when performing in a normal or even exaggerated fashion. The presentation will further highlight these relationships with statistical findings and present results for the other musical excerpts examined.

Keywords

Expressive intentions, performance, motion capture, piano, clarinet

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