

Characteristics of Movement and Emotions Elicited by Two Different Kinds of Dance

by

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As a kinetic bodily logos dance could be seen as a language communicating feelings and emotions through movements. Recent studies focused on isolated body part to study the capacity of dance movements to transmit emotions to the audience. Use of space in classical ballet is characterized by "fluid" body movements with large, open segment motions and changes in velocity with jumps, rotations, and a general perceived "lightness of the body" both from the dancer and from the audience. We studied the audience feelings and emotions elicited by these two very different styles, using a noise free method (motion analysis graph and animated stick figure). Many unexpected characteristics and emotions were elicited with particular reference to gender.

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Introduction

The capacity to transmit emotions is the main aim of expressive movements. Dance is strictly related to emotion expression, but has also a qualitative and technical content.

Rudolph Laban was the first to analyze the emotional content of dance movements, and developed a notation technique which describes these movements in terms of its qualitative attributes (Laban 1984).

The characteristics of movement in the Laban dance notation theory are direction, effort, time, weight, space and flux. Camurri (1999) proposed a technique based on motion capture to transform the kinematic parameters of a dance sequence into Laban categories and to link those kinematic parameters to emotions.

Bronner and Spriggs (2002) studied the smoothness of the displacement of the trajectory of the elevating foot during the Arabesque movement in classical ballet, using an index of smoothness (variation of acceleration, Jerk - Cost function). Studying 30 dancers (14 male and 16 female) they found that the smoothness of movement increases from beginners to expert dancers. Matsumoto (1987) studied the relationship among feelings and dance movements. He concluded that high speed of movements suggest happiness. A similar study by Brownlow (1997) found a relationship of happiness with open movements and of sadness with low energy. Sawada and co-workers (2003), studied the effects of the movement of one arm on feelings of a group of 22 observers. They found that the subjects were able to accurately discriminate among the feelings that the performers intend to suggest (Joy, Sadness, and Anger): higher accelerations suggested Anger, and lower accelerations suggested Joy and Sadness. During the dance performances, emotion evoked by movements are conveyed more from whole body movements than from movement of a single body part. Other variables, such as cultural background, and the sex of the performers, could influence the emotion and the attributes of movement perception by the audience. We distinguish between emotions and others variables different from emotions. This attributes could be defined, according to The Stanford Encyclopaedia of Philosophy, as Qualia (singular Qualium) that are "internal mental states of perceived reality".

In this paper, we studied the range of emotion and "Qualia" elicited by two very different dance movements in a sample audience and its relations with cultural gender variables.

Whole body movement in space (right anterior superior iliac spine trajectory plotted on the horizontal plane) were computed with the Vicon software Workstation ver. 4.1 using the Davis model (fig. 1).

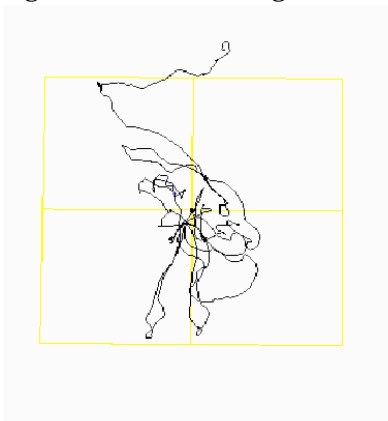


Fig. 2 Trajectories of cg on plotted on horizontal plane in the afro dance sequence.

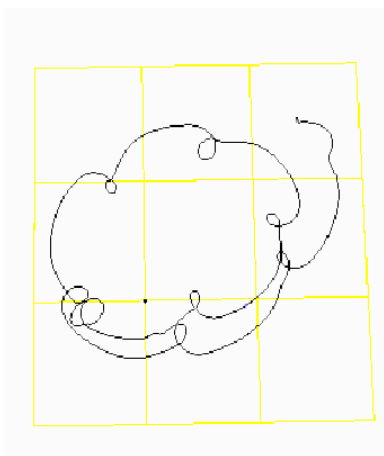


Fig. 3 Trajectories of cg plotted in the horizontal plane in the pirouettes.

In fig. 2 and 3. the trajectories of anterior superior iliac spine in the horizontal plane, during a free improvisation sequence of afro dance (1) and of a series of pirouettes of classical ballet were shown . In fig. 2, the afro dancer trajectory, while in fig. 3 the classical ballet (pirouette) trajectory could be observed, plotted on the horizontal plane. In fig. 2 the mean acceleration value during the

whole sequences was 20,6 metres per second squared, whereas in fig. 3 it was 10,5 metres per second squared.

Subjects

Fifty physical education students (24 female and 26 male) with a mean age of 21,5 years (range 18-27), were asked to see fig. 2-3 and an animated stick figure (Fig. 4) of the movements represented in fig. 3 and 4 , in alternate order, before to fill in a short questionnaire (table 5) designed to obtain feedback about the sensations and qualia elicited by the two dance sequences.

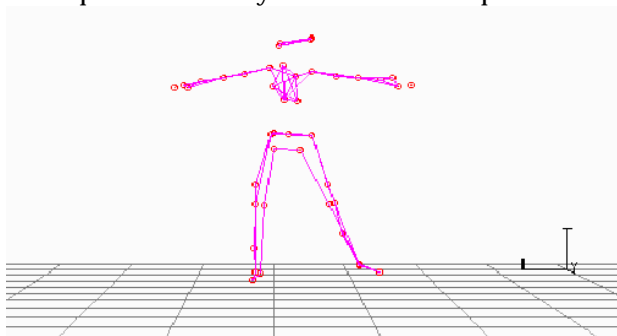


Fig. 4. A frame of the animated figures used as feedback stimula.

Results

No difference between sex in the answers to the questionnaire was found (Manova $F=0,385$, $p=0,05$). Results of the questionnaire are summarized in tables 1-4.

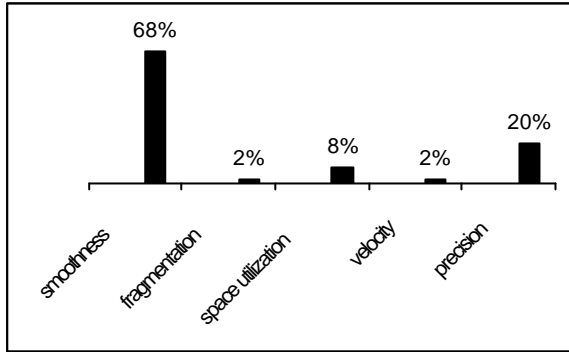


Table 1. Perceived movement characteristics of pirouettes.

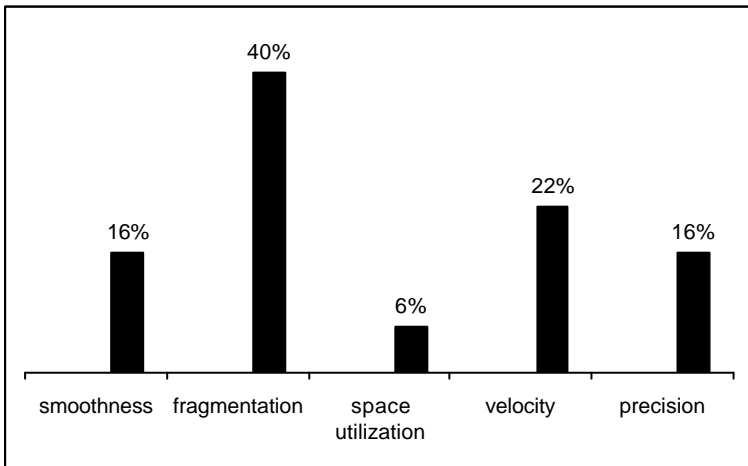


Table 2. Perceived movement characteristics of afro improvisation.

68% indicate the smoothness of movement to be the main sensation elicited by classical ballet sequence, while 40 % indicate movement fragmentation as the main sensation for the afro dance sequence. Shape precision was the second choice for classical, while movement velocity was the second choice for afro sequence.

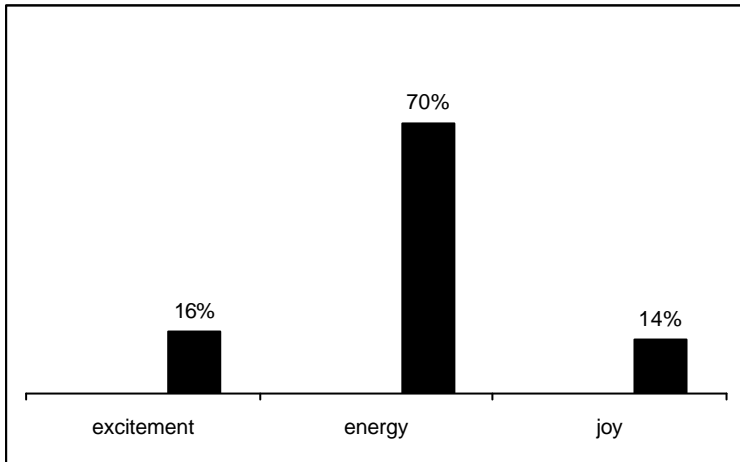


Table 3. Emotions suggested by the afro dance sequence

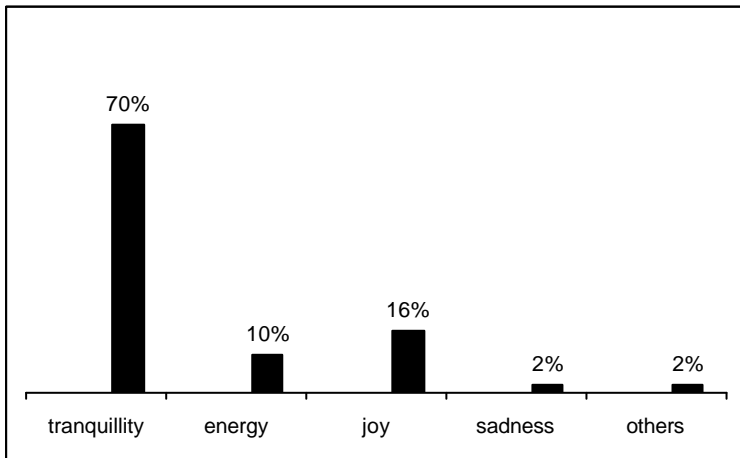


Table 4. Emotion suggested by piroettes.

Classical ballet suggests tranquillity to 70% of the sample, while afro dance suggests energy also to 70% of the sample.

Classical ballet was seen as melodic (100%) while afro sequence was seen as syncopate for the whole sample. An interesting finding is that while for the classical ballet 74% of the sample indicate that the performer was a woman (vs. 6% who saw a man and 20% that was unable to discriminate the sex of the

dancer). For afro sequence 54% of the sample indicate the performer was a man (vs. 26% that was unable to distinguish and 16% that indicate the performer to be a woman). This seems to indicate that an irregular and fast dance movement is perceived to be performed by man.

Discussion

A simple qualitative method utilizing as feedback stimuli animated images captured with a motion analysis technique and graphs of trajectories of the body in the horizontal plane, was proposed to study different sensations and perceived characteristics elicited by two, very different movements: a classical ballet pirouette sequence and a free improvised afro dance sequence.

Sawada (2003) found a relation between intention of the dancer and the feeling perceived by the audience. He studied the emotions of Joy, Sadness and Anger elicited by movements of one arm. However the general impression elicited by a movement is due in real condition most to total body movement than to a single body part movement and at a "bound" of emotion and movement qualia. Comparing two very different whole body movements, we found the existence of a range of emotion and characteristics, others than Joy, Sadness and Anger. This suggests that the perception of a dance movement is a complex phenomena that involves also cultural aspects, as gender stereotypes.

Table 5. Questionnaire.

1) What were in your opinion the most impressive characteristics of the two sequences ?

sequ. A

- 1) movement smoothness
- 2) movement fragmentation
- 3) space utilization
- 4) movement velocity
- 5) shape precision
- 6) other (specify)

sequ. B

- 1) movement smoothness
- 2) movement fragmentation
- 3) space utilization
- 4) movement velocity
- 5) shape precision
- 6) other (specify)

2) What are the emotions/sensations you feel seeing at the two sequences:

sequ. A

- 1) agitation
- 2) tranquillity
- 3) energy
- 4) happiness

sequ. B

- 1) agitation
- 2) tranquillity
- 3) energy
- 4) happiness

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|---|-------------------------|-----------|------------------|
| 5) hungriness | 5) hungriness | | |
| 6) others (specify) | 6) others (specify) | | |
| 3) Seeing at the sequences, what kind of rhythm do you feel ? | | | |
| sequ. A | sequ. B | | |
| 1) melodic 2) syncopate | 1) melodic 2) syncopate | | |
| 4) In your opinion, the dancer of the two sequences is: | | | |
| Sequ.A | | | |
| | 1)a man | 2)a woman | 3) I don't know |
| Sequ. B | | | |
| | 1)a man | 2)a woman | 3) I don't know. |

Conclusions

These findings could be useful for the enlargement of the definition of feelings and qualitative contents elicited by dance movements in the light of a better understanding of the effect of dance on spectators.

Further studies analyzing whole body movements are needed for better understanding of emotions and the motion characteristics in dance.

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