

Intended versus perceived emotion

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This paper reports the preliminary results of an activity involving the communication of intended and perceived emotions. Six male students were requested to present their interpretation of the piece *Tempo Livre* (Free Time) after practicing for ten days. The participants were instructed to mobilize their store of musical procedural knowledge in order to convey an intended emotion. Eight other students were requested to write down their perception of each of the six individual performances. Results show that communication does not correlate with years of musical study and that there is a pointed divergence between intended and perceived emotions.

Keywords: emotion; piano performance; communication; circumplex model

The expression of emotion in music performance is a form of nonverbal communication that elicits a wide variety of responses among listeners and participants. Emotion and music performance have been investigated under different perspectives. For instance, Peretz and Zatorre (2005) developed neuroimaging techniques in order to access relationships between emotion and performance in the brain. Mathematical algorithms (Zhu *et al.* 2006) and new computational models of interactive multimedia platforms (Leman and Camurri 2005) have been proposed as a means to model some aspects of emotion during performance. Juslin *et al.* (2006) evaluated a computer program that automatically analyzes music performances and provides feedback to musicians in order to enhance their communication of emotions. Schoonderwaldt *et al.* (2002) also proposed similar computer systems. Other researchers have focused on the relationship between the performer and the audience. Resnicow *et al.* (2004) found some correlations between the identification of emotion during music performance and everyday emotional intelligence. Other studies have pointed out the importance of both musical

structure (Sloboda and Lehmann 2001) and the visual aspects in the perception of communicated expression (Vines *et al.* 2006).

According to Persson (2003), interpretative processes are very complex and intuitive. Most musicians tend to agree with this assertion, although they believe instrumental teaching and learning should not lack a systematic approach which enhances the communication of emotion. Some researchers have confirmed that professional musicians are capable of communicating specific emotions to the audience (Juslin 2000, Juslin and Madison 1999, Gabrielsson and Juslin 1996). On the other hand, in the case of amateurs, Juslin and Laukka (2000) observed that the level of accuracy is lower than that of experts; however, accuracy can be improved by appropriate feedback. Thus, as far as instrumental teaching is concerned, it seems relevant to investigate the degree of deliberation and intentionality of emotion that is to be communicated. Although expressivity is a fundamental aspect of music performance, music instruction tends to privilege mechanical prowess. Throughout our music practice with students at all levels, we have found that communicative skills must be developed along with instrumental expertise.

The present paper reports some preliminary results about communicated intentional emotions and the perceived emotions by a musically educated audience. The piano students used in this activity were both undergraduates and graduate students.

METHOD

Participants

A semester-long course with one two-hour weekly meetings and a lab was set up for undergraduate and graduate piano students at the Federal University of Rio Grande do Sul (UFRGS). This course allowed for diverse opportunities for both performance and discussion. For this particular activity, six males participated as performers and eight other students (male and female) were selected as listeners.

Materials

Tempo Livre (Free Time) is a short work from Jmary Oliveira's cycle entitled *Oito Peças* (Eight Pieces), written in 1966. The rhythmic organization is based on a proportional ratio of short and long values devoid of time signature. There are no indications for dynamics, nor any for articulations.

Table 1. Emotions intended by the performers and perceived by some listeners during the recording sections of *Tempo Livre* by Jamary Oliveira.

Performers <i>Intentions</i>	Listeners				
	1	2	3	4	5
A Anger	Decided	Instability	-	Sadness	Anger
B Rude	Spontaneous	Agitated	Indifferent	Bad mood	Suspense
C Anger	-	Anger	Crazy	Impatient	Hate
D Astuteness	Affirmation	Determination	Determin.	Suspicion	Determin.
E1 Sadness	Romantic	Absorbed	Atmosphere	-	Serenity
E2 Transience	Hesitating	Restless	Cold	Joke	Anxiety
E3 Intolerance	Joke	Intense	Answered	The evil	Calm/tense
F Sadness	Mournful	Mistrustful	Calm	Anger	Fear

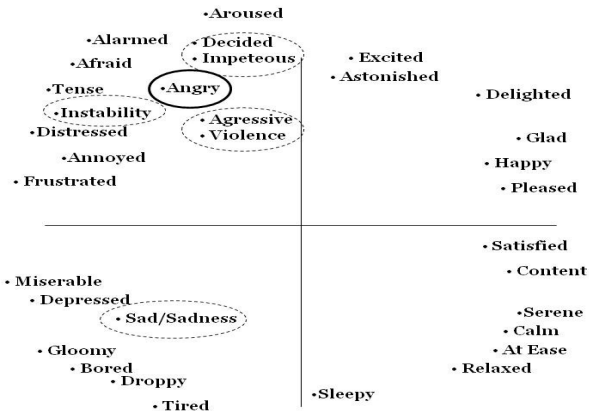
Procedure

Six male students were requested to present their interpretation of the piece *Tempo Livre* (Free Time) after ten days of practicing. The participants were instructed to mobilize their store of musical procedural knowledge in order to convey an intended, deliberate emotion (mood, feeling, attitude, character) of their own choosing. The choices of intended emotions were not disclosed during the recording of the performances. Eight students were requested to write down their perception of each individual performance. The interpretations were recorded live.

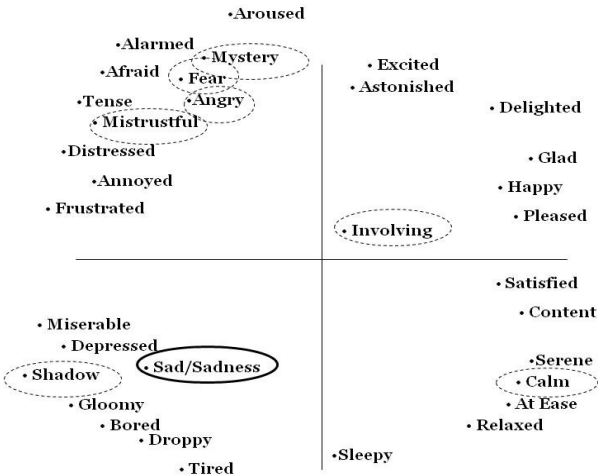
RESULTS

In Table 1, the Performers (left column) are arranged in order of academic rank (undergraduate to graduate) and are labeled by letters. For instance, Performer A is a freshman enrolled in the undergraduate piano course, whereas Performer F is a second-year applied piano graduate student. For the sake of spontaneity, listeners were randomly numbered. Given the freedom allowed for the perceived emotions, the terms used to describe emotional intention range between adjectives and nouns. At no time did we try to restrain the responses. Table 1 reflects this diversity of the answers of some listeners.

Preliminary data were analyzed by a circumplex model of emotion from Russell (1980), which consists of a two-dimensional, circular structure involving activation and valence.



Scheme 1



Scheme 2

Figure 1. Application of Russel's (1980) Circumplex model. Scheme 1: Performer A (first semester undergraduate); Scheme 2: Performer F (second year graduate).

In Russel's Circumplex Model, activation corresponds to a physiological response (e.g. calm, tense, tired, excited), while valence accounts for mood or expression that captures the experience of emotion (e.g. happy, sad, angry).

Within this structure, emotions on opposite poles, such as sadness and happiness, correlate inversely. The circumplex model captures two important aspects: (1) emotions that vary in their degree of similarity and (2) certain emotions (e.g. happy, sad) that are often thought of as bipolar. In Figure 1, the two schemes represent the relation between intended emotion (continuous line) and perceived emotion (dashed line). For the undergraduate performers (Scheme 1), there is a high consensus between intended and perceived emotions. Scheme 2 shows a significant dispersion of perceived emotions. In other cases, for instance, for Performer D (recent graduate), the intended emotion, “astuteness, mixture of cleverness with determination,” was perceived by three of the listeners as “determination” (see Table 1).

By comparing Schemes 1 and 2 (that of a junior and a second-year graduate piano student), it is possible to observe that years of study do not in and of itself guarantee success in communicating an intended emotion. The performer D (7th semester undergraduate) was the most successful in transmitting the intended emotion (see Table 1).

There is a related point that concerns the rhythmic structure associated with well-defined physical gestures that are employed as a means of expressive communication. There is a high degree of correlation between stressed and non-stressed events throughout the performances.

DISCUSSION

Throughout the activity, it became clear to us that the students were eager to face the proposed challenges. One of them insisted on being recorded three times (see Performer E in Table 1). On the other hand, it also became clear that the free flow of emotion did not find correspondence in all instances. From the point of view of the performers, the perceived emotion varied so widely as to require a sobering—albeit partial—conclusion. The level of complexity revealed by the imprecision and subjectivity, as well as the idiosyncrasies shown in the descriptions (see Table 1) require further searching for methodological alternatives.

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