

What is the color of this musical excerpt?

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Try it yourself!
Listen to the excerpts, play with the colors,
take part in the experiment and get to know "Chorinho"!
<https://tiago-kth.github.io/human-perception/>



Abstract

This project explores how a synesthetic experience related to music perception and color association varies across cultures, and whether music with more energetic expressions elicits richer color responses. A total of 165 participants took part in a survey using a customized webpage. The results showed important differences in color preferences for each emotional expression studied. Furthermore, a correlation between the subjective intensity of the excerpt (considering that, in terms of intensity, Joy > Tender > Sorrow) and the variety of colors chosen by the participants was observed.

Background

Representing musical information in a visual, graphical, non-verbal way opens many possibilities. Studies have shown that people tend to follow certain patterns when associating emotions to colors [1]. These patterns are also present when associating music to colors [2], since this association is mediated by emotion [3].

References:

1. Zentner MR (2001) "Preferences for colours and colour-emotion combinations in early childhood". Developmental Science, 4:4, 389-398
2. Bresin, R. (2005). What is the color of that music performance?, In Proceedings of the International Computer Music Conference - ICMC 2005, 367-370
3. Lindborg P, Friberg AK (2015) Colour Association with Music Is Mediated by Emotion: Evidence from an Experiment Using a CIE Lab Interface and Interviews. PLOS ONE 10(12): e0144013

Method

Six excerpts were chosen based on associations to the emotions joy, sorrow and tender, two for each emotion. All excerpts were chosen from a popular Brazilian instrumental genre, "Choro", or "Chorinho". A digital form was implemented by means of a customized webpage, where the participants got to listen to the excerpts and choose between eight colors (magenta, pink, blue, cyan, green, yellow, orange, red), depending on how much they felt their selection matched the music. Multiple colors could be chosen, and the background changed with the choices in a checkered pattern. No mentions of emotions were made at any moment to the participants.

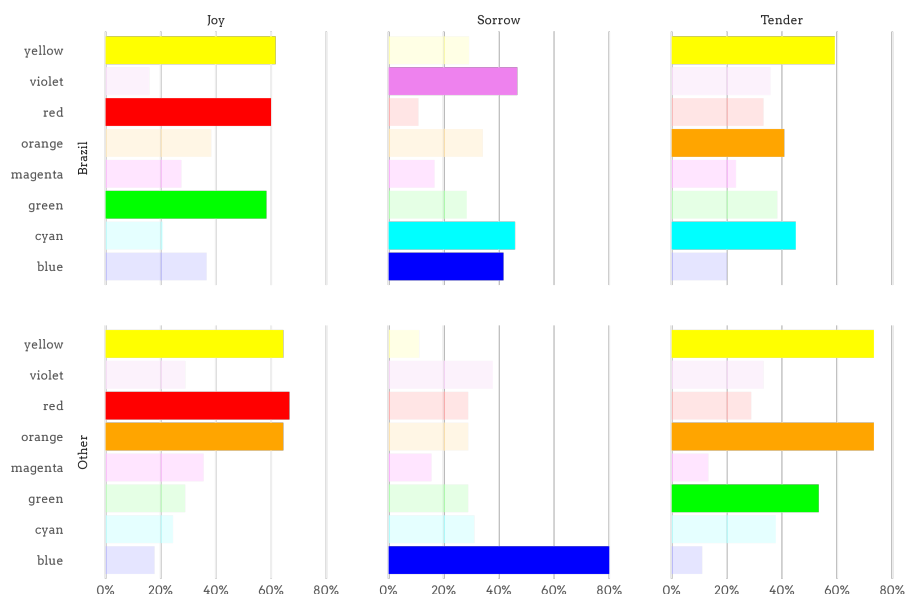
Participants

A total of 165 people took part in the experiment, completing the test and sending valid responses. Of those, 120 were Brazilians and 45 were non-Brazilians, from 18 different countries. 65% of the participants were female. Their age varied from 11 to 76, with a median age of 42. Of all participants, 45% reported experience playing a musical instrument.

Results

The chart summarizes color preferences for each expression (Joy, Sorrow, Tender) across the groups (Brazilians and non-Brazilians).

Percentage of users that chose a given color to an excerpt of a given expression
(colors picked by less than 40% of the users are transparent to highlight the main picked colors)

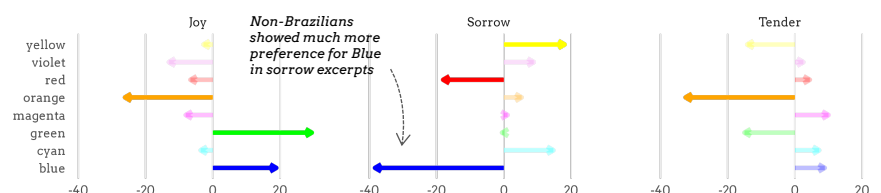


Conclusion

The same excerpts taken from a particular regional musical genre seem to elicit different color associations from people of that region compared with people from other regions, sometimes very significantly so.

Differences in color association for different expressions

Arrows indicate preference difference in percentual points. To the left, non-Brazilians showed more preference for that color in musical excerpts of that emotional expression. To the right, Brazilians showed more preference.



Regardless of the country of origin, on average, participants tended to choose a greater number of distinct colors the more energetic the excerpts were.

Average number of different colors chosen by participants for each excerpt

