Commentary on Frank et al.'s "Exploring the variability of musical-emotional expression over historical time"

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ABSTRACT: Music is often regarded as the 'language of the emotions' (Cooke, 1995), and since the early 20th century, empirical research into musical emotions has been conducted to explore the mystery of how they are evoked by music. In this context, Frank et al. presented an experimental study that examined the scarcely researched field of *historical listening.* Their study aimed to investigate the question, "Do modern listeners hear the emotional content in Baroque music that the composer intended to portray?". The results indicated that modern listeners placed the three modern excerpts in the expected quadrants of the valence-arousal space. However, there were significantly different valence and arousal ratings among the Baroque examples and the modern excerpts, and significant differences between paired examples (where Baroque and modern examples were expected to fall into the same quadrants) occurred. This commentary summarizes Frank et al.'s experimental study, discusses methodological considerations, and suggests possible refinements for future (experimental) studies on historical listening.

MUSIC is often regarded as the 'language of the emotions' (Cooke, 1995), and empirical research into musical emotions has been conducted since the early 20th century (e.g., Handbook of Music and Emotion edited by Juslin & Sloboda, 2011a). However, the fact that music may evoke musical emotions is still a mystery (Juslin & Sloboda, 2011b, p. 3; also see Juslin & Sloboda, 2013). Nevertheless, recent studies on musical emotions have received well-deserved attention in the last three decades. These studies primarily operate with two theoretical paradigms: *discrete emotion theory* (e.g., Izard, 2007; Panksepp, 2007) and *dimensional emotion theory* (e.g., Barrett et al., 2007; Russell, 1980). Using one of these two paradigms, some acoustic cues showed consistent and clear effects across Western listeners, notably mode. In this context, studies within the discrete paradigm showed that the major mode is associated with happiness and the minor mode with anger or fear (Quinto et al., 2014). Within the dimensional paradigm, and according to Gagnon and Peretz (2003), the major mode is linked with positive valence, whereas the minor mode is associated with negative valence. Based on these examples, the question of why mode consistently has an impact on emotional judgments across Western listeners is somewhat surprising from an evolutionary perspective. Thus, some researchers suggest candidate rationalization for the emotional effect of mode (e.g., Huron & Davis, 2012). In addition, an understanding of music's emotional content, especially in terms of specific structural elements and their relation to vocal expression (speech), has been theorized over more than 400 years (e.g., Kivy, 1980; Mattheson, 1739).

Frank et al.'s experimental study is embedded within the above-outlined theoretical and empirical context of musical-emotional expression and perception. In their paper "Exploring the variability of musical-emotional expression over historical time," they focus on historical listening, which has often been a subject of theoretical discussion (Burstyn, 1997) but has rarely been researched with the help of an experimental investigation (e.g., Stoessel et al., 2021). The authors follow an interesting approach by studying if modern listeners hear the emotional content that the composer intended to portray in Baroque music. This line of research may improve the understanding of historical listening and give a possible experimental approach

because it is the first to compare listener ratings of musical emotions in historical music with the composer's explicit intention.

To be specific, Frank et al. used a sample of 30 undergraduate students (14 females, 16 males, participants' mean age was 22, *SD* = 7.14; age ranging from 18 to 57) at Stellenbosch University. The authors focused on three musical examples from Heinichen's (1728) treatise *Der General-Bass in der Composition*. In this context, Heinichen provided verbal descriptions for each musical example. Frank et al. used these descriptions to map the keywords (e.g., furious, rage, anxious, or playful) extracted from them to the quadrants of the valence-arousal (VA) space: Q1 (high V, high A), Q2 (low V, high A), Q3 (low V, low A), and Q4 (high V, low A). Unfortunately, Heinichen's (1728) descriptions did not provide any good examples for Q3. Thus, Frank et al. selected one musical example for each of the three remaining quadrants and complemented it with one modern musical excerpt by Vieillard et al. (2008). This allows the authors to validate the experimental procedure by comparing the listener ratings with those established by Vieillard et al. (2008). Then, the experimental study was conducted one-on-one. The participants filled out a questionnaire and rated all six musical examples by filling in a valence score for the example on the first listening and an arousal score on the second. For this purpose, Frank et al. used an 11-point scale ranging from -5 to 5 for each dimension, with the poles "sad" and "happy" for valence and "sleepy" and "energetic" for arousal (the zero point was labeled "neutral").

The study yielded some noteworthy findings: First, using descriptive statistics such as median and mean, Frank et al. found that the participants placed the three modern excerpts in the expected quadrants of the VA space, which parallels the results described by Vieillard et al. (2008) and reflects the validity of their experimental study. Second, Frank et al. showed that modern-day listeners interpret Heinichen's (1728) Baroque examples differently from the composer's intention. In other words, modern-day listeners' ratings differed significantly from the expected quadrants of the VA space, implied by Heinichen's (1728) descriptions of the examples. Moreover, using Kruskal-Wallis tests, the authors found significantly different valence and arousal ratings among the three paired examples (Baroque example and modern excerpt). Third, Frank et al. also reported that none of the Baroque examples fell into the quadrants best corresponding to Heinichen's (1728) descriptions. In conclusion, Frank et al. demonstrated that modern-day listeners interpret Baroque examples differently from the composer's intentions.

CRITICAL APPRAISAL

The authors discuss an important topic, as there is a need for more experimental investigations regarding historical listening. The theoretical background of the paper is consistent and has a common thread concerning the research question, with a focus on the understanding of the emotional content of music. Within the methods, the musical stimuli selection procedure, the experimental procedure, and the data analysis are straightforward and adequately explained. Moreover, the authors use modern musical excerpts (Vieillard et al., 2008) to compare the Baroque examples with the modern excerpts and to validate the experimental procedure. This is a strength of Frank et al.'s experimental approach and investigation into historical listening. In addition, the results are well-presented and discussed. Finally, limitations and directions for future research are included.

METHODOLOGICAL CONSIDERATIONS

Despite these significant findings, it is important to acknowledge some methodological considerations and suggest possible refinements for future studies in historical listening. In this context, the methodological considerations are related to the sample, the measures, and the application of the VA space.

The sample of Frank et al.'s study is small, even if this is an experimental study. In addition, the age range of the sample is huge. It may be difficult to generalize Frank et al.'s findings to a larger population due to this small size and heterogeneity in terms of age sample. Further, all undergraduate students are from one university in South Africa. While Frank et al. stated that there should be a follow-up study with greater durations of each example to investigate if the intended emotional content of the examples is better embodied in other sections, the sample for this study could be intensely discussed and planned (e.g., power analysis) – perhaps by limiting the age range or by investigating a larger sample with differing age levels.

Concerning another aspect of the sample used in Frank et al.'s study, the authors only assessed the years of formal musical training (*M* = 4.34 years of formal training, *SD* = 5.02). However, the number of years of formal musical training may neglect the diverse and multifaceted nature of musical activities. In this

context, measurement instruments, such as musical sophistication (Müllensiefen et al., 2014) or musical engagement (Chin & Rickard, 2012) consisting of different dimensions or indices, should be used in future studies. With this, the author could describe the sample in more detail and conduct further data analyses, for instance, by adding dimensions or indices as covariates. In addition, familiarity with Baroque music could be assessed, as well as familiarity with the modern excerpts (Vieillard et al., 2008) to control for familiarity effects and participants' knowledge of Baroque music.

      Moreover, the authors assessed self-reported valence and arousal ratings with an 11-point scale for each dimension (with the poles "sad" and "happy" and "sleepy" and "energetic"). However, it would be interesting to assess additional valence and arousal ratings with the non-verbal Self-Assessment Manikin (SAM; Lang, 1980) to avoid and/or control effects implied by the point-scale or pole description. Moreover, comparing the valence-arousal (VA) space ratings with participants' SAM ratings could be an approach to capture additional ratings and validate the ratings against each other. In addition, both discrete and dimensional paradigms could be considered to gather musical-emotional expression and perception. Finally, psychophysiological measures (for an overview, see Hodges, 2011) could be gathered in addition to self-reported valence and arousal ratings. Psychophysiological measures may give a new perspective to compare listener ratings of musical emotions in historical music with the composer's explicit intention and to investigate further differences between Baroque and modern musical excerpts.

CONCLUSION

Overall, Frank et al.'s study focused on an essential topic within the research area of musical emotions, specifically historical listening. The research question, "Do modern listeners hear the emotional content in Baroque music that the composer intended to portray?" addressed an important debate. On the one hand, this debate concerns whether changes in cue use may reflect and fall in line with Horn and Huron's (2015) findings on the changing prominence of different emotional portrayals. On the other hand, as stated by Frank et al., changes in cue use could also hint towards changes in the emotional impact of the cues. Frank et al. shared essential results based on an experimental procedure. However, future research in historical listening is needed to provide evidence of systematic changes in modern-day listeners' perceptions of musical emotions over time.

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NOTES

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