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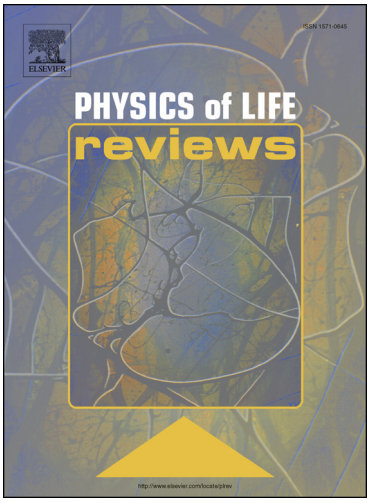

Pleasure of sad music – From descriptions toward explanations

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Pleasure of sad music - From descriptions toward explanations

Comment on “An Integrative Review of the Enjoyment of Sadness Associated with Music” by Tuomas Eerola et al.

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In their review, Eerola et al. offer a comprehensive view on an ancient dilemma: Why and how do we appreciate sad music? Mainstream music psychology has favored simpler topics, e.g., about the relationship between familiarity and preference in musical choices, but Eerola and his team have taken this more challenging route to understand music-induced emotions and preferences.

This review has a very ambitious starting point: it aims at illustrating the pleasure of sad music at various levels, namely, neural (biological), psychological, and cultural levels. In doing so, it is obvious that the affordances of divergent fields differ from each other and, consequently, their explanatory powers differ quite remarkably as well. This indeed is the novelty of Eerola et al.'s contribution. They tease apart in an elegant and objective manner the current contributions of neural, psychological, and cultural research traditions. While doing so, they also call upon new research initiatives for each of these traditions.

The integrative concept of this review, drawing from these different traditions, is *hedonic shift* – a process during which the listener can elaborate his/her emotional state from negative toward (at least mildly) more positive. In this process, which is also called mood regulation (ref 1), music and other arts can be used intentionally and also unintentionally.

In his prior work, Eerola has used computational techniques to determine key elements of several musical genres such as classical, pop, movie soundtracks, as well as world music. For these analyses, he has used live music, recordings as well as archives, and also data from social media (e.g., last.fm). As one example of these analyses, closely related to the current review, I will next introduce the analysis of Finnish folk tunes with regard to their mode, namely, major or minor.

On most occasions, music psychology literature has determined strong associations between the major mode and happy music, which is paralleled with the association between the minor mode and sad music. Thus, by comparing the frequency of these two modes in folk tunes originating from different geographical locations in Finland, we can indirectly determine their uses in everyday life when listeners seek hedonic shifts.

Together with Academy Professor Petri Toiviainen, Eerola had access to an archive of 9000 Finnish folk tunes. The tunes were digitized, and from these data various features of each song were determined (http://esavelmat.jyu.fi/index_en.html). Yet mode was analyzed according to categorization of the original collectors of the songs. It was found out that on the West coast of Finland the great majority of songs were in the major mode, while in Eastern Finland close to half

of them were in the minor mode (see Figure 1 for illustration; Ref 2). This suggests that musical preferences can differ remarkably within one country and within one musical genre.

Interestingly, this division of Finland into “West-happy” and “East-sad” parts of the country is paralleled with differences in the occurrence of cardiac diseases, with Eastern Finns dominating in the analyses for sudden deaths caused by cardiac reasons (Ref’s 3 and 4). This geographical division also reflects genetic differences within the Finnish population (Ref 5). It is possible but not conclusive to speculate about the proportion of genetic or cultural factors on the “West-happy” and “East-sad” distinction – most likely these two factors interact. Even more speculative avenues are ahead if we consider the possible interaction between the occurrence of cardiac diseases and preferences for different modes of music.

To conclude, even if the review of Eerola et al. in many parts offers more questions than answers, it integrates in an excellent manner the current knowledge at various levels of human behavior with regard to music-related preferences and enjoyment which, indeed, may have a deep impact on our mental and physical well-being and social functions.

References:

(1) Saarikallio, S. & Erkkilä, J. (2007). The role of music in adolescents' mood regulation. Psychology of Music, 35, 88-109. https://doi.org/10.1177/0305735607068889.
(2) Toiviainen, P. & Eerola, T. (2006). Visualization in comparative music research. In A. Rizzi & M Vichi (Eds.), COMPSTAT 2006 - Proceedings in Computational Statistics. Heidelberg: Physica-Verlag, 209-221.
(3) Strandberg, T. (2009). Mollisävelmien Suomi – sydäntautien Suomi (”Finland in minor, Finland with cardiac diseases”) Duodecim, 125,2593-2596. http://www.duodecimlehti.fi/api/pdf/duo98459.
(4) Tyynelä, P., Goebeler, S., Ilveskoski, E., Mikkelsson, J., Perola, M., Löytönen, M., Karhunen, P.J. (2009). Birthplace predicts risk for prehospital sudden cardiac death in middle-aged men who migrated to metropolitan area: The Helsinki Sudden Death Study. Annals of Medicine, 41, 57-65. doi: 10.1080/07853890802258753.
(5) Översti, S., Onkamo, P., Stoljarova, M., Budowle, B., Sajantila, A., Palo, J. U. (2017). Identification and analysis of mtDNA genomes attributed to Finns reveal long-stagnant demographic trends obscured in the total diversity. *Scientific Reports*, *7*(1), 6193. doi: 10.1038/s41598-017-05673-7.

Figure legend:

Figure 1: Schematic map of the relationship between folk songs in minor and major modes. X and Y axis refer to longitude and latitude of the map coordinates and the colour indicates the proportion of songs in the minor key. Red: minor dominates. Blue: major dominates. Source Reference 2.