

LETTER TO THE EDITOR

The Prolactin Theory of Sad-Music Enjoyment is Wrong.

Published 2023 August 10; <https://doi.org/10.18061/emr.v17i1.9322>

THE EDITOR:

In 2011 I published an article describing my "Prolactin Theory," a speculative theory whose aim was to account for the enjoyment of nominally sad music. That article noted that, among other known functions, prolactin is a peptide hormone that is released under conditions of stress, especially in circumstances where a person is brought to tears. In order to maintain homeostasis, it is often the case that the release of any endogenous compound is accompanied by the release of a countervailing compound that returns the body to equilibrium. In the case of prolactin, that countervailing compound is known to be dopamine, a neurotransmitter that also figures prominently in the experience of pleasure.

In the prolactin theory, I proposed that, when listening to nominally sad music, listeners would experience a form of contagious or empathetic stress, inducing a release of prolactin. Although music listening can be stressful, unlike other stressful experiences there is no true threat to the listener's wellbeing and so cognitive appraisal ought to ultimately suppress the release of any stress-related compounds. My suggestion was that those listeners who enjoy listening to sad music might be the beneficiaries of an excess of dopamine, released in response to elevated prolactin that in turn is suppressed through cognitive recognition of the inconsequential stress suggested by the music. Conversely, I proposed that those listeners who dislike listening to sad music might experience a stress-related release of prolactin, with only a modest or moderate mediating effect from dopamine (Huron, 2010, 2011).

The specific claims in the Prolactin Theory readily afford empirical testing, and in my lab we subsequently tested the theory by measuring serum concentrations of prolactin in volunteer listeners who heard participant-selected happy and sad musical passages. We found no evidence of changes in prolactin and no correlation with reported pleasure or enjoyment (Ladinig *et al.*, 2019). We reported the negative results of this test at the 2011 Society for Music Perception Conference in Rochester, New York (Ladinig *et al.*, 2011).

Independent of our own tests, a more extensive test of the prolactin theory was conducted by Eerola and colleagues (Eerola *et al.*, 2021). Examining a wider range of hormones and recruiting participants exhibiting both high and low trait empathy, they reported that none of the stress markers tested showed any changes across the various conditions or participant groups. As with our own study, the Eerola *et al.* findings are not consistent with my homeostatic prolactin theory of sad-music enjoyment.

Despite these negative reports, my 2011 article continues to be regularly cited in the psychological literature. Indeed, of the more than 100 research articles I have published, this article is my third most-cited work. Although many of these citations predate the publication of the empirical failures, the article continues to be cited favorably on a regular basis.

I would encourage members of the research community to avoid citing this article unless the aim is to draw attention to its failed status. The Prolactin Theory of sad-music enjoyment is wrong.

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