

Commentary on Lee and Zaryab: Does groove really influence sexual selection?

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ABSTRACT: Music is a stimulus that is known to have manipulative potential in different societal contexts. Misattributed arousal is one mechanism through which music may affect perception and behavior. Lee and Zaryab (2022) present a study that examined the influence of groove on sexual selection in a simulated speed-dating paradigm, building upon research by Marin et al. (2017) and Chang et al. (2021). Their results indicate that groove ratings predicted sexual attraction among males, but not among females. This commentary discusses several methodological issues and suggests possible refinements for future studies on music-induced arousal transfer, which may ultimately enhance our understanding of how music can affect mate choice. Finally, I discuss the topic in the context of the origins of music and musicality.

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THE role of music in the context of romantic/sexual attraction has recently regained attention in the field. Studying the power of music in a mating context is a question of relevance to music psychology because it may help elucidate one of the most intriguing questions of mankind, namely why humans have the ability to produce and enjoy music (see, e.g., Ravignani, 2018). Darwin's sexual selection hypothesis of music (Darwin, 1871; Miller, 2000) is one of the alternative theories to the idea of natural selection as the driving force behind musicality (Kalinowski et al., 2021). Empirical evidence supporting Darwin's idea has been accumulating slowly over the last few years (e.g., Charlton, 2014; Madison, Holmquist & Vestin, 2018; Marin et al., 2017; Marin & Rathgeber, 2022) and Darwin's theory has also been discussed in the wider theoretical context of creativity and artisticness (e.g., Miller, 2001; Novaes & Natividade, 2022; Varella et al., 2022). More recent evidence for a role of music in mate choice stems from research about the contents of online dating profiles, suggesting that people who mention music in their profiles are more desirable dates (Lee et al., 2019). Indeed, self-presentation on dating platforms now also allows for the inclusion of songs and playlists (Kang, 2021).

Lee and Zaryab's study (2022) is embedded within the context of misattributed musical arousal (Marin et al., 2017) and groove-induced bonding effects (Chang et al., 2021). The authors follow a timely and interesting approach by studying how groove, as an arousal-inducing feature of music, may increase sexual attraction in a fictitious speed-dating paradigm. This line of research may improve our understanding of the underlying mechanisms by which music may affect mate choice. Possible candidate mechanisms may involve music as an aesthetic display and as a set of sexually-selected indicators (Miller, 2000), but the exact nature of these mechanisms still needs to be determined in greater detail.

To be specific, Lee and Zaryab (2022) employed a within-subjects design to compare the effects of low- vs. high-groove accompaniment (i.e., drum tracks) on ratings of physical attractiveness of opposite-sex faces. The experiment was presented to two groups of participants (one male and one female) as a simulated face-to-face dating event. Participants also provided ratings of the degree to which the drum-tracks made them want to move. In their comprehensive statistical analysis, the authors reported one significant effect suggesting that males' groove ratings predicted the facial attractiveness ratings of female faces. I suggest caution regarding the interpretation of this effect and present several reasons for concern below. In my opinion, the interpretability of the current empirical data is difficult due to the limitations of the research design.



METHODOLOGICAL CONSIDERATIONS

The instructions of the experiment included rather detailed information about the purpose of the experiment, namely “to discover whether the experience of groove (the sensation evoked by highly rhythmic music, involving an urge to move in time with it) can affect people’s judgments of sexual attractiveness”. To be sure, one could have stated the purpose of the experiment by giving fewer details. To explain the observed sex difference, the authors argue against demand characteristics because the effect of groove ratings on facial attractiveness ratings was not present among females. In my view, sex differences in participant demand characteristics (Nichols & Maner, 2008) is a complex topic on its own that is not sufficiently studied, especially not in the field of music psychology. One way to increase the interpretability of results regarding sex differences is to employ more than one dependent variable in the research design (see, e.g., Marin et al., 2017, Marin & Rathgeber, 2022).

It is a challenging task to explain sex differences when studying partner choice because there are many factors to be considered; some may be deeply rooted in biology and evolution (Buss, 1995), whereas others may be linked to cultural and social influences (e.g., Howard, Blumstein, & Schwartz, 1987). For instance, in Marin et al.’s (2017) study on misattributed arousal, males’ ratings of facial attractiveness and dating desirability were not significantly influenced by musical priming, whereas dating desirability increased significantly in a paradigm in which a direct link between musical primes and facial targets was established (Marin & Rathgeber, 2022). Therefore, sex differences in mate choice may also depend on the psychological mechanism being studied.

I commend Lee and Zaryab (2022) on having tested both sexes (I use this term here because the authors talk about sex differences in their article), but I am critical about their relaxed treatment of potential confounding variables. The authors provide some valid arguments against matching for mood and music preferences (e.g., that groove ratings were directly obtained from the participants and used to predict sexual attraction). However, the argument for ignoring relationship status is not fully convincing because, as the authors state themselves, there may be sex differences regarding the effect of relationship status on ratings of sexual attraction (de Jong, Reis, Peters, DeHaan, & Birnbaum, 2019). In my opinion, it is not a good idea to ignore relationship status in a research design simply because there may be a relationship status \times sex interaction. Moreover, the authors argue that the current task is not relationship-threatening, and therefore the effect of this variable is assumed to be insignificant (Linardatos & Lydon, 2011). Nevertheless, recent eye movement research has shown that relationship status and sociosexual orientation moderate the link between visual attention and ratings of facial attractiveness (Mitrovic et al., 2018).

Since our knowledge about person-related factors affecting sexual attraction in paradigms involving music and visual stimuli is still very limited, I suggest collecting as many meaningful background variables as possible and considering them either in a matching procedure (see Marin et al., 2017; Marin & Rathgeber, 2022) or in an advanced statistical analysis, such as linear mixed-effects modeling. We did not employ this type of analysis in our own previous studies because at that time we aimed for statistical simplicity and comparability across studies. However, future studies should definitely move towards linear mixed-effects modeling. Only then will we get a better idea of the underlying factors and mechanisms explaining sex differences in partner choice in the context of music experience and move away from speculations. In this process, it is also necessary to consider certain confounding variables only relevant among females, such as hormonal contraceptive use, which has been shown to have an impact on facial attractiveness and sexual attraction (Little et al., 2013). In the current study by Lee and Zaryab, females were not screened for hormonal contraceptive use, which somehow limits the comparison with the results of Marin et al. (2017) and Marin and Rathgeber (2022).

Undoubtedly, it would have been advantageous to include a silent control-condition. This would have allowed the authors to directly compare their results with Marin et al. (2017) and with other studies that included a control condition in their design (e.g., Meston & Frohlich, 2003). At the moment, the study by Lee and Zaryab (2022) can only draw conclusions about the differential effect of low- vs. high groove on sexual attraction. In my view, it would be very informative to examine whether the musical accompaniment has a positive effect on attraction in addition to comparing low- vs. high-arousing conditions in the future.

Another methodological issue that is worth discussing relates to the lack of arousal ratings of the drum tracks, which the authors mention themselves as a limitation. It is surprising that the drum tracks were not rated for arousal because the current study by Lee and Zaryab is embedded into the literature of excitation transfer and misattributed arousal (see also Marin, Gingras, & Bhattacharya, 2012). Instead, the authors refer to the study by Bowling et al. (2019), who reported increased pupillary dilation and subjective arousal in

response to high-groove music/drum tracks compared to low-groove music/drum tracks. Nevertheless, arousal ratings would have been useful, not only to support the argument that high-groove tracks were more arousing than low-groove tracks (further note that the groove ratings of low- vs. high groove tracks were not clearly differentiated), but also to help better explain any observed sex differences based on empirical data. The authors discuss their finding in relation to Bowling et al.'s study (2019), who reported larger arousal effects with regard to groove for males than for females. They also mention the study by Meston and Frohlich (2003) whose data suggested a numerically greater arousal affect on sexual attraction among males. Similarly, Chang et al. (2021) reported a numerically greater effect of high- vs. low-groove music on males' compared to females' romantic interest. It may well be true that the excitation transfer effect is smaller among females than males, and I see merit in the idea, but at present it is yet unclear whether the observed effect among males is genuine or an artifact, and whether this effect may be specific to excitation transfer related to groove or other variables.

Finally, I question the validity of the authors' statistical analysis, which veers dangerously close to "circular analysis" (see Makin & Orban de Xivry, 2019). The authors' hypothesis states that there are no differences between male and female participants, but after having reported the results of a whole-sample ANOVA (with neither a main effect for sex nor a significant interaction with sex), they present separate analyses for both participant groups and report a significant effect for males. In my opinion, such an approach would be more justified if the initial hypothesis predicted a sex difference, and if this hypothesis was borne out by the data.

THEORETICAL OUTLOOK

The origins of human musicality are currently widely debated in the field (e.g., Leongómez, Havlíček, & Roberts, 2022). For instance, recent theories emphasize different social bonding mechanisms that may underlie musicality (Savage et al., 2022), focusing on the overarching functions of musicality in different social settings (i.e., social bonding in infant care, mate bonding and social cohesion). On the surface, such comprehensive theories sound attractive because they unite different functions of musicality under one umbrella term. However, they make only vague hypotheses about musicality's evolutionary roots. Indeed, Savage et al. are not necessarily assuming that musicality is a biological adaptation. Instead, they surmise that aspects of musicality may have originated from cultural inventions and/or can be viewed as byproducts from other adaptations. Due to the complexity of human musicality, this theory thus provides a rather soft ground for falsification. Furthermore, Savage et al. claim that they are not rejecting the sexual selection theory of Darwin and that bonding theories and sexual selection are complementary. The current work by Lee and Zaryab (2022), if replicated with experimental improvements, could provide further empirical support for the role of groove in mate bonding (Chang et al., 2021). This would extend research that has purely focused on music-induced arousal transfer without considering groove or other musical features (Marin et al., 2017; Marin & Rathgeber, 2022).

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NOTES

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