Proceedings of the 6th International Conference on Education Innovation and Psychological Insights
DOI: 10.54254/2753-7048/2025.ND34337

Music in Sexual Attractiveness: Does the Effect of Music Differ Between Sexes

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Abstract. While the source and purpose of music is still a mystery, the theory, first promoted by Charles Darwin, that music is an adaptation for sexual selection is one of the most popular explanations for the phenomenon of music.1 In numerous animal species, Darwin saw that certain sounds are made exclusively during the breeding period and function to attract breeding partners. Like music in humans, production of these sounds can be energetically costly, and birds have even been observed to faint and die from exhaustion during particularly ostentatious singing performances. Darwin reasoned that only if males were certain to impress females would they take the risks to impress them. We study here whether women are more sexually aroused listening music compared with men, given their role in the evolutionary process of sexual selection. Participants are 150 healthy university male and 150 healthy university female volunteers aged 18 to 25 split in 5 groups of each sex who listened to different genre of instrumental music without lyrics. Arousal level data collected by the physiological measurements (penile strain gauge, photoplethysmogram, and wearable biosensors) or by the self-reported questionnaires. The conclusion would be validated for Darwin's hypothesis, if females show a greater arousal level in the case of both genres, otherwise other hypotheses would be taken into account.

Keywords: music, mating, sex difference, adaptation, sexual arousal

1. Introduction

"Our ancestral hominid-Hendrixes could never say, 'OK, our music's good enough; we can stop now,' because they were competing with all the hominid-Eric Claptons, hominid-Jerry Garcias, and hominid-John Lennons. The aesthetic and emotional power of music is exactly what we would expect from sexual selection's arms race to impress minds like ours."

— Loersch & Arbuckle, Evolution of Human Music through Sexual Selection

Male individual usually conveys their superiority, flexible degree by singing to attract female and fight with another male. This behavior is a immediate result of sexual selection [1] that greatly affect mating success. Coevolution theory [2] supposes that the music and mating behavior may interact and evolve in concert. Tere is for example a male species who use song to attract females and female preference leads to musical evolution of its males. Such a two-way interaction implies that there must be some interconnection between music and mating, such that mate competition can potentially play an important role in music evolution [3].

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Lying on this foundation of very fundamental theories, in this study, we assume an exciting research question whether and how responses of people to sexual arousal differ as function of type of music, as a potential mating strategy adaptation, to enlightening evolutionary meaning of music in sexual arousal. In doing so, we conducted a questionnaire and physiological measurement to analyze effects of different types of music on sexual arousal. It is hoped that this approach will help to determine in what way particular classes of music subtly influence physiological reaction as to enrich our current understandings about the intricate and dynamic nature of the links between music, psychology and physiology.

The example of the animal kingdom illustrated the applicability of the notion of music for sexual selection. For instance, male songbirds exhibit songs that are composed and complicated and attract mates, and females are often more likely to select males with more complicated or more attractive songs [4]. As the preference of females develops, the songs develop more and more complicated from generations to generations. As in a similar way, complex song patterns of humpback whales are supposed to serve a function in mating activities and can be competitive between male to bring up the most attractive song that could attract to the female [5].

In the long history of mankind, music also served as social bonding among friends. Traditional music was used in rites and rituals that carried social and procreative meanings. There is an existence of correlation between friend ship and music, as in different cultures, and music is used very much in marriage and all social parties.

We attempt to answer whether these evolutionary rules are at play in modern humans. In studying body reactions [6] to various types of music in order to discern which music increases sexual stimulation. Our study could present insights into the influence music has on the appearance of humans, and on human mating patterns, and therefore show how evolutionary pressure influences our choice of music and strategy for mating.

In conclusion, this study brings to us more overall information about how music does, not only improve our emotional life, but also possibly involved in human mate attractiveness and pairing. Through combination of the three aspects of knowledge: evolutional biology, psychology and musicology, we will understand the modes that music affects our lives.

2. Method

2.1. Participants

The study includes a random selection of 150 healthy male and 150 female university students aged 18 to 25, divided as following table 1:

Table 1. Participants & types of music

	Classical Music	Pop Music	Jazz	Folk Music	Rock & Roll
Male	Group 1 (30)	Group 2 (30)	Group 3 (30)	Group 4 (30)	Group 5 (30)
Female	Group A (30)	Group B (30)	Group C (30)	Group D (30)	Group E (30)

2.2. Materials

We used five different genres of music – classical music, pop music, jazz, folk music and rock music in this research, these genres are all very different. Each genre will be denoted by instrumental music with no lyrics, so that we can zero in only the effect of music melody on sexual arousal. Each

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group participants shall attend the song corresponding to the music genre to which they are assigned.

Further, participants will fill out a questionnaire in which we will include self-designed questions, the Positive and Negative Affect Schedule (PANAS) and the Relationship Assessment Scale (RAS) [7]. To record data about sexual arousal we will utilise penile strain gauges [8] for the male and photoplethysmograms for the female participants. Both measures only specific to each gender's arousal physiologically.

Besides, they will wear biosensors to track reproductive hormones through the measure of the testosterone and estrogen concentrations. This data will complement the one gathered through strain gauges and photoplethysmography. Last, but not least, the participants will wear wearable smart ring to track other physiological information (i.e., heart rate, skin conductance, body temperature).

2.3. Procedure

Researchers are going to partition the male participant as 5 groups, Group 1, Group 2, Group 3, Group 4, Group 5 and each group has 30 male participants. Likewise partitioning the female participant as 5 groups, Group A, Group B, Group C, Group D, Group E and each group has 30 female participants. The group 1 and Group A will listen classical music; the group 2 and Group B will listen pop music; the group 3 and Group C will listen jazz music; the group 4 and Group D will listen folk music; the group 5 and Group E will listen rock $\&$ roll.

All participants will be located in their own room to maintain their privacy, silence, etc. The participants will be listening to the appropriate song according to the group number with the equipment capturing physiological data. Following the music listening, the participants will take a questionnaire, as stated in materials section. This methodology aims to obtain subjective and objective data for better accuracy of the results. Moreover, the physiological data recorded prior the completing of the questionnaire will not be available for the participants, thus, they will respond in complete subjectivity.

2.4. Data analysis

The researchers will compare the degree of sexual arousal between males and females in groups having listened to the same song (Group 1 versus Group A, Group 2 versus Group B, Group 3 versus Group C, Group 4 versus Group D, and Group 5 versus Group E). Researchers will also compare the degree of sexual arousal in female groups that listened to various songs (Groups A, B, C, D and E). Given these comparisons we will then evaluate whether or not music served as an adaptation during the human evolutionary history.

3. Discussion

3.1. Possible results

Theoretical Study Hypothetically, it could be found from the data analysis that women shows substantially greater levels of physiologic and psychological sexual arousal than men exposed to different category of music, supported by a past study that women who had listened to music had rated faces as much more attractive than those without music, whereas such a result was not found in men [9]. If this were so, it would lend credibility to the alternative prediction that the effects of music on sexual arousal may differ between sexes. This hypothesis could be understood as music as

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a mating adaptation, that may increase the degree of sexual desire among females or as a signal of male fitness and/or social status [3], boosting overall mating frequency and reproductive success.

That's because, alternatively, females and males can have the same arousal to a music and this would be consistent with no specification effect of music, because, according to this hypothesized effect of the instrument, music impacts on mating in both sexes with the same arousal level.

A second potential outcome is that males are in a general sense sexually aroused more by music than females are. Such a result would be contrary to the alternative hypothesis and consistent with the music being an adaptation implemented by females to attract males. Such a finding may call into questions those theories that maintain that music's primary function is as a vehicle for female attraction, and may lead a theory to be re-interpreted.

Participants can also show differential reactions to different types of music, with the responses to rock & roll stronger for males and different ones to pop music from females. This latter pattern would imply music as a by-product of mating and not necessarily as a direct sexual adaptation, and individual variability in musical preferences will likely result in different physiological and psychological reactions. Secondly, there may be genres that are male- or female-biased in response, as found by earlier studies [10].

The hypothetical outcomes discussed here all assume that music causes sexual arousal. However, it is also possible that music does not elicit sexual arousal or may even reduce sexual desire. Similar results have been observed in past studies [11]. In this case, music may serve functions unrelated to sexual attraction, such as parental care [12] or mood regulation [13].

Finally, we deem it improbable that results will be comparable arousal between sexes, or that the results will be of higher arousal for males, but no study found any results supporting this hypothesis. For the remaining two possible results we deem these to be equally likely.

3.2. Limitations and future directions

Nonetheless, though physiological and psychological studies present sex differences in music's impact on the sexuality arousal, there are still several constraints for this study. Firstly, control variables are absent. In particular, participants' mental status is taken into account, and changes in mental status may influence the accuracy of psychological responses. Hence, supplementary questionnaire for participants' affective state, including any relationship modifications or mental state (e.g., autism), would be a way to control for this aspect.

Second, even with the control provided by the initial questionnaire, there are still factors out of the experimenters' control, if participants themselves interact directly with each other. For instance, the level of male hormones may change according to the physical attractiveness of the female participants. When the female participants are attractive, the level of male hormones may increase, when not, the level of male hormones may remain unchanged or decrease. Such a problem would also hold if the experiment had included female subjects rating male faces, so we are unable to know whether our arousal modulations come from music or the physical object. Such a problem originally motivated us to place people in separate rooms. However, revisiting our plan, we have re-considered letting our participants become acquainted. As in this work we are not testing whether music makes participants aroused but only whether music has a suggestive effect on arousal, it could be that some external trigger might be required in order to evoke arousal. This could perhaps be done through a real-life dating experience in a follow-up experiment.

Fourth, although our participants are healthy, college undergraduates, the study does not differentiate any of them by culture or by music preference, either. Individual experiences of different genres of music may be different based on aesthetic experience, or cultural backgrounds.

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An individual's susceptibility to certain types of music may indeed differ. Brittin (2013) showed that people respond differently to music across national borders and religions [14]. Thus, if the participants are able to listen to music with their own cultural or personal tastes, maybe their hormonal reactions would be even more intense, and their previous reaction might not occur. e.g, a Chinese participant might respond more vigorously to Chinese traditional song rather than Western classical music. Splits among participant nationality/religion and type of music listening to each condition would facilitate the maximum of testing for the impact of music on sexual arousal.

3.3. Evolutionary evidence related to Darwin

However, we believe that the question also concerns philosophy. Our work this last two weeks is a first small step towards discussing a deeper and interesting question, inspired by the theory proposed by Charles Darwin, as it has been the source of plenty of studies to this day. We simply consider that this is very important, to find an answer for "why" we still compose and appreciate music.

4. Conclusion

4.1. Prediction of sexual differences

Music is a universal language which can touch human deepness and feelings. As to sex differences, although our experiment includes the possibility that there is no statistical difference between both sexes in appreciation of music, we assume male and female appreciation of music is not alike. And we further assume that female can enjoy music more sensationally in terms of sexual arousal. As for Question 1. In his work Questions of Cultural Identity, Stuart Hall claims that men are primarily reactive to the beat of the music, whereas women are more sensitive to the music's emotional content and they are more emotionally involved [15].

4.2. About future studies

Thus, as a first step we are integrating this psychology idea into the sociological framework to study on a concept of sexual arousal, a sophisticated chemical reaction in relationships. In the later phase we are trying to find social motivations behind evolution of music. As for an instance, studies would consider as to what if the evolution of music solved the survival difficulty in mating on the ancestors or music had a pre-dominant role in socializing?

References

[1] Andersson, M., & Iwasa, Y. (1996). Sexual selection. Trends in ecology & evolution, 11(2), 53-58.
[2] Miller, G. (2000). Evolution of human music through sexual selection. na. https: //direct.mit.edu/books/edited-volume/chapter-pdf/2298293/9780262285698_cas.pdf
[3] Miller, E. K. (2000). The prefontral cortex and cognitive control. Nature reviews neuroscience, 1(1), 59-65.
[4] Tregenza, T., Wedell, N., & Chapman, T. (2006). Introduction. Sexual conflict: a new paradigm?. Philosophical Transactions of the Royal Society B: Biological Sciences, 361(1466), 229-234.
[5] Herman, L. M. (2017). The multiple functions of male song within the humpback whale (M egaptera novaeangliae) mating system: review, evaluation, and synthesis. Biological Reviews, 92(3), 1795-1818.
[6] Heiman, J. R., & Rowland, D. L. (1983). Affective and physiological sexual response patterns: The effects of instructions on sexually functional and dysfunctional men. Journal of psychosomatic research, 27(2), 105-116.
[7] Watson, D., Hubbard, B., & Wiese, D. (2000). General traits of personality and affectivity as predictors of satisfaction in intimate relationships: Evidence from self-and partner-ratings. Journal of personality, 68(3), 413-449.

DOI: 10.54254/2753-7048/2025.ND34337

[8] Barlow, D. H., Becker, R., Leitenberg, H., & Agras, W. S. (1970). A mechanical strain gauge for recording penile circumference change. Journal of Applied Behavior Analysis, 3(1), 73.
[9] Marin, M. F., Zsido, R. G., Song, H., Lasko, N. B., Killgore, W. D., Rauch, S. L., ... & Milad, M. R. (2017). Skin conductance responses and neural activations during fear conditioning and extinction recall across anxiety disorders. JAMA psychiatry, 74(6), 622-631.
[10] Nater, U. M., Abbruzzese, E., Krebs, M., & Ehlert, U. (2006). Sex differences in emotional and psychophysiological responses to musical stimuli. International journal of psychophysiology, 62(2), 300-308.
[11] Wan, C., & Lalumiere, M. L. (2017). Can music cue sexual arousal?. The Canadian Journal of Human Sexuality, 26(3), 238-248.
[12] Mehr, S. A., & Krasnow, M. M. (2017). Parent-offspring conflict and the evolution of infant-directed song. Evolution and Human Behavior, 38(5), 674-684.
[13] Metzenmacher, M., Griesinger, F., Hummel, H. D., Elender, C., Schäfer, H., de Wit, M., ... & Eberhardt, W. E. (2023). Prognostic factors in nonsmall cell lung cancer: insights from the German CRISP registry. European Respiratory Journal, 61(2).
[14] Brittin, J., Sorensen, D., Trowbridge, M., Lee, K. K., Breithecker, D., Frerichs, L., & Huang, T. (2015). Physical activity design guidelines for school architecture. PloS one, 10(7), e0132597.
[15] Grossberg, L., Hall, S., & Du Gay, P. (1996). Questions of cultural identity. Identity and Cultural Studies: Is that all there is, 87-107.