

# Gender differences in Moral Valence, Sentiment, and Narratives of Song Lyrics Over Time

*Keywords: music, moral valence, lyrics, topic modelling, gender, sentiment analysis*

## Extended Abstract

Song lyrics are rich in meaning. They convey concepts of love, life, death, politics, and religion, amongst others [1]. Lyrics can also communicate moral messages as a call to action for societal changes, such as promoting peace [2] and supporting marginalised groups [3], but also to promote (or protest) sexism and gender discrimination [4]. Analysing the content of song lyrics can thus help measure changes in cultural norms, emotions, and values. Between 1971 and 2011, for example, there were more Billboard Hot 100 hits focusing on lust in the absence of love than there were songs with a (pure) love theme [5]. Between 1955 and 2003, Billboard No. 1 songs with a focus on the future and greater mention of social processes and intergroup themes were more popular during periods of threatening social and economic conditions [6]. Sexist content and gender bias increased from 1960 to 2010, especially among male artists and for popular songs appearing in Billboard charts [4].

For this work, we examined how moral expressions, narratives, and sentiments of the songs have evolved through different periods with respect to artist gender and music genres. We queried the WASABI database [7] and collected all solo artists' English song lyrics published between 1960 and 2010, resulting in 375,521 songs. We further retrieved Billboard Hot 100 weekly charts for identifying popular songs within the WASABI data. We analysed imprints of morality in the lyrics using the MoralStrength lexicon, which holds a novel performance in predicting moral valence in text across five traits: Care/Harm, Fairness/Cheating, Loyalty/Betrayal, Authority/Subversion, and Purity/Degradation [8]. Then we applied a topic modelling approach based on Latent Dirichlet Allocation (LDA) to discover common patterns in the lyrics narratives. Additionally, we examined the sentiment variations of the song lyrics using the VADER (Valence Aware Dictionary and sEntiment Reasoner) model.

Preliminary results showed that the relative fraction of songs using moral rhetoric has increased over time. Lyrics expressing ethics of fairness and authority were especially prominent in hip-hop songs by male artists. This resonates with the evolution of rap and hip-hop musical styles on Billboard charts [9]. Female artists' communicated the value of care more frequently in their songs, especially in the 70s and 90s, possibly in response to anti-war and anti-discrimination movements of the time. Further, lyrics expressing virtues of sanctity and purity were most prevalent in the early 80s, 90s, and early to mid-2000s.

Regarding lyrics narratives, we obtained nine topics related to introspection; love; desire; death, fear and violence; aggression; life changes and transitions; nature; emotional vulnerability; and rhythm and movement. Some notable differences in how male and female artists have approached these themes over the years can be observed. Female artists, for example, have increasingly emphasised introspective self-expression in their lyrics, particularly after the 90s. On the other hand, male artists seem to have shifted away from introspection and towards displays of vulgarity and dominance. This trend may reflect broader cultural implications related to authentic ideals of masculinity in hip-hop culture [10]. Further, songs about love, more frequent among female artists, have generally decreased over time.

We observed a considerable increase in negative words and a decrease in positive words in the lyrics throughout the analysed period, suggesting that songs have become more pessimistic or critical over time. The song lyrics of female artists consistently had a higher proportion of positive words, while negative terms were nearly equal for both genders. Rock music had the most increase in negatively loaded lyrics, especially after the 80s, possibly due to its role as a unifying force for protests and social movements related to issues of race, gender, sexuality, and peace during that time.

By examining changes in moral expressions and narratives and the sentiment of songs across different times, we can uncover intriguing details about the ways in which lyrics respond to evolving gender roles and other cultural shifts. Ultimately, our findings highlight the cultural significance of song lyrics and their important role in shaping our understanding of societies and worldviews.

## References

- [1] V. Preniqi, K. Kalimeri, and C. Saitis, ““more than words”: Linking music preferences and moral values through lyrics,” *ISMIR*, 2022.
- [2] J. O. Adebayo, ““vote not fight’: Examining music’s role in fostering non-violent elections in nigeria,” *African Journal on Conflict Resolution*, vol. 17, no. 1, pp. 55–77, 2017.
- [3] D. D. Sellnow, “Music as persuasion: Refuting hegemonic masculinity in “he thinks he’ll keep her”,” *Women’s Studies in Communication*, vol. 22, no. 1, pp. 66–84, 1999.
- [4] L. Betti, C. Abrate, and A. Kaltenbrunner, “Large scale analysis of gender bias and sexism in song lyrics,” *arXiv preprint arXiv:2208.02052*, 2022.
- [5] Y. Madanikia and K. Bartholomew, “Themes of lust and love in popular music lyrics from 1971 to 2011,” *Sage Open*, vol. 4, no. 3, p. 2158244014547179, 2014.
- [6] T. F. Pettijohn and D. F. Sacco Jr, “The language of lyrics: An analysis of popular billboard songs across conditions of social and economic threat,” *Journal of language and social psychology*, vol. 28, no. 3, pp. 297–311, 2009.
- [7] G. Meseguer-Brocal, G. Peeters, G. Pellerin, M. Buffa, E. Cabrio, C. Faron Zucker, A. Giboin, I. Mirbel, R. Hennequin, M. Moussallam, *et al.*, “Wasabi: A two million song database project with audio and cultural metadata plus webaudio enhanced client applications,” 2017.
- [8] J. Graham, J. Haidt, S. Koleva, M. Motyl, R. Iyer, S. P. Wojcik, and P. H. Ditto, “Moral foundations theory: The pragmatic validity of moral pluralism,” in *Advances in experimental social psychology*, vol. 47, pp. 55–130, Elsevier, 2013.
- [9] M. Mauch, R. M. MacCallum, M. Levy, and A. M. Leroi, “The evolution of popular music: Usa 1960–2010,” *Royal Society open science*, vol. 2, no. 5, p. 150081, 2015.
- [10] D. U. Patton, R. D. Eschmann, and D. A. Butler, “Internet banging: New trends in social media, gang violence, masculinity and hip hop,” *Computers in Human Behavior*, vol. 29, no. 5, pp. A54–A59, 2013.

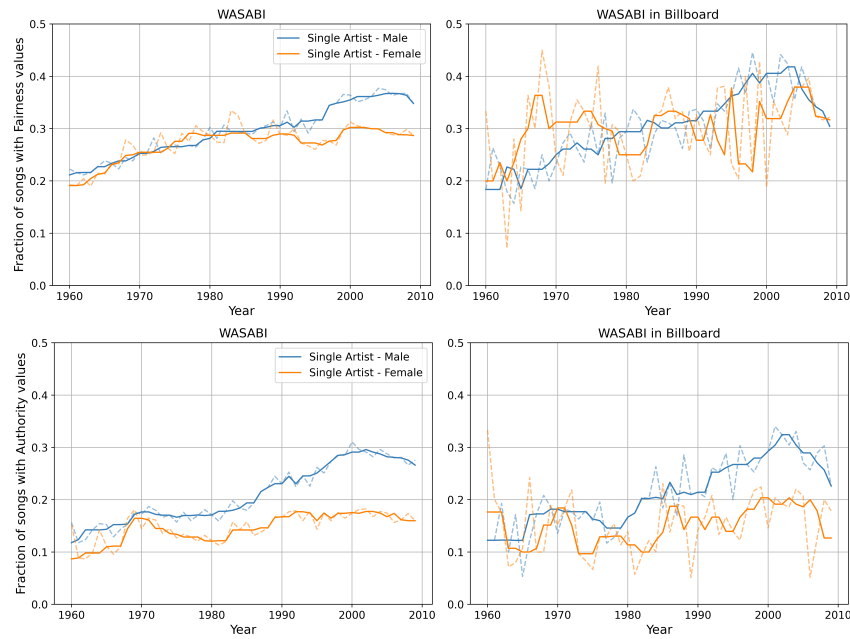


Figure 1: Yearly fraction of songs by characterised by high Authority and Fairness by male and female solo artists, and songs in Billboard charts. Dashed lines are raw fractions of songs, solid lines a median filter with window = 5 years.

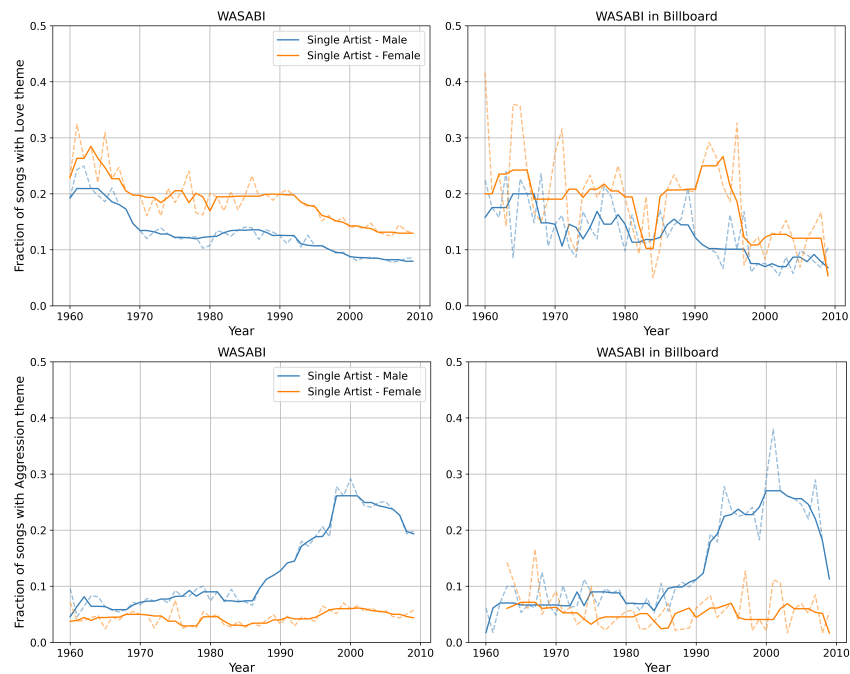


Figure 2: Yearly fraction of songs by characterised by Love and Aggression Themes by male and female solo artists, and songs in Billboard charts. Dashed lines are raw fractions of songs, solid lines a median filter with window = 5 years.