

"I Believe that Morality is Gone": A Large-Scale Inventory of Moral Foundations in Lyrics of Popular Songs

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Moral intuitions are salient in a wide range of song lyrics^{1,2}. We computationally replicate these findings by examining the moral content of **56,324 song lyrics** and show that musical genres differ in their moral constitution. Furthermore, preliminary results suggest that moral foundations and genre interact to predict song popularity. Lastly, we demonstrate that a song's audio features and moral content can classify its genre with up to 80% accuracy.

Background:

Moral intuitions are salient in a wide range of media content including lyrics of popular songs^{1,2}.

According to Moral Foundations Theory³ and the Model of Intuitive Morality and Exemplars⁴, there are five universal moral foundations that guide media exposure and appeal: *Care/harm*, *Fairness/cheating*, *Loyalty/betrayal*, *Authority/subversion*, *Sanctity/degradation*.

Here, we replicate and extend previous work by computationally extracting the latent moral information that is represented in a large selection of popular song lyrics. In addition, we examine how moral information differs across musical genres. Finally, we present results on predicting the popularity of a song and classifying its genre.

Data:

We scraped the top artists per musical genre from *Billboard* resulting in a total of **878 unique artists**.

Using *Spotify's* API, we retrieved all albums, songs, and metadata for these artists, yielding a total of **6,624 albums** spanning **56,324 songs**. Lyrics for each song were retrieved using the Python package *LyricWikia* and minimally preprocessed.

Moral information was extracted from each song using the extended Moral Foundations Dictionary (E-MFD)⁵. The E-MFD is based on a crowd-sourced content-analysis and provides the probability that a given word belongs to any of the five moral foundations.

Analyses:

First, we examined differences in moral content across musical genres (Figure 1 & 2). Results suggest that there exist theoretically meaningful differences in moral content across genres.

Second, we applied linear regressions to predict a song's popularity (Figure 3). Here, we find that moral content interacts with a song's genre in predicting a song's popularity.

Third, we attempted to classify the genre of particular song using a combination of logistic regression, class weight balancing, and binary classification (Table 1; Figure 4). Here, we find that a song's audio features are generally more predictive of its genre than the moral content contained in the lyrics of a song.

Results:

Figure 1. Moral Foundation Density Across Musical Genres

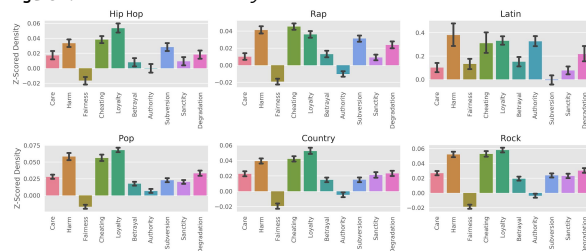


Figure 2. Top Moral Words Across Rap, Rock, and Country



Figure 3. Relationship Between Genre, Moral Content, and Song Popularity

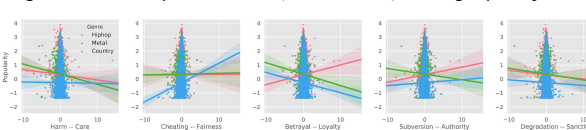
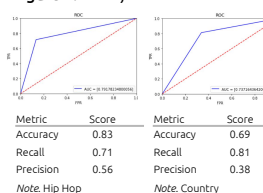


Table 1. Genre Feature Importance

Feature	Importance	Feature	Importance
Speechiness	0.20	Speechiness	0.15
Explicit	0.14	Duration	0.10
MF_RATIO	0.04	MF_SUM	0.06
MF_SUM	0.03	MF_RATIO	0.05
Fairness	0.02	Fairness	0.03
Note: Hip Hop		Note: Country	

Figure 4. Classification Accuracies



Discussion:

We herein replicate and extend previous work that aims to extract the latent moral content permeating lyrics of popular songs.

Preliminary results suggest that (a) musical genres differ in their moral constitution, (b) moral content interacts with a song's genre when predicting song popularity, and (c) audio features are more meaningful features when trying to classify the genre of a particular song.

Future analyses will utilize syntactic dependency parsing for a more fine-grained analysis of moral framing and stereotyping across genres. In addition, we aim to combine our content features with a large survey of music audiences to investigate the relationship between a person's moral sensibilities, their musical preferences, and the moral content within their preferred musical genre.

REFERENCES

- [1] Hahn et al. (2019)
- [2] Long & Eveland (2018)
- [3] Graham et al. (2013)
- [4] Tamborini (2011)
- [5] Hopp et al. (2018)

ACKNOWLEDGEMENTS

