Moral Themes in Lyrics of Popular Rap Songs in Comparison to Other Music Genres

An Application of the Model of Intuitive Morality and Exemplars

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Moral themes in lyrics and Amazon reviews of popular songs: Rap songs and more

Abstract

In the documented history of humanity, music is nearly ubiquitous (Levitin, 2006): it accompanied humanity in various emotional experiences (e.g., dancing at a wedding), in personal life (e.g., singing while driving), and in media content. Despite its prevalence, music is a relatively less studied media content than other media content, such as television news, movies, over-the-top media content, and social media. However, it should be noted that music is incorporated into the aforementioned media. Therefore, studying the effect of music from a media and communication perspective provides a complementary understanding of the concurrent complex media contents.

I. Introduction

Among various components of music, this study focuses on lyrical influence. Lyric is a pivotal partner in many popular songs (Juslin, 2005), especially for controversial genres. Considering the influence of song lyrics on its audiences (Ballard et al., 1999), there has been concern about what values music should express through its lyrics (McLeod et al., 1997). For instance, *Nuthin' But a 'G' Thang* is an iconic rap song from Dr. Dre and Snoop Dogg, which sparked a controversy regarding the violence and misogyny in its lyrics (Walsh, 2022). This incident is neither the first nor last rap song to incite polarization.

Certain genres have been subject to criticisms for their lyrical contents: rap, heavy metal, and rock to mention a few. Despite its empowerment of African-American culture and minority groups, and communication of their struggles and dissatisfaction with social injustice, Rap lyrics, more often than not, address sex, drug, misogyny, and violence in an antisocial manner (Binder,

1993; Epstein, Pratto, Skipper, 1990). Heavy metal songs tend to feature violence, homicide, suicide, sexual promiscuity, and Satanism (Arnett, 1996; Gore; 1987; Richmond & Wilson, 2008). Rock songs are also known to contain similar content in their lyrics (Brown & Campbell, 1986; Wass et al., 1989). However, past studies on these songs focused on specific content without a coherent theoretical framework and a small number of samples, which hinders the generalizability of the findings (e.g., Ballard, 1999; Coutinho, 2017). This study suggests examining lyrics and their effect on audience appraisal from the perspective of morality with the model of intuitive morality and exemplars.

Two studies are conducted to understand the lyrical content in music genres and their subsequent effects on audience appraisal. The first study focuses on what makes a rap song different from other popular songs, specifically in lyrical contents (including morality, sentiment, and use of profanity). The second study expands from the first by a) including other genres that are also stigmatized for antisocial lyrics (i.e. rock and heavy metal) and a non-controversial genre (i.e. pop) and b) directly examining the short-term effect of the model of intuitive morality and exemplars: how does lyrical content of songs affect audience appraisal (i.e. the degree of moralization in review content and review ratings).

II. Study 1

Model of Intuitive Morality and Exemplars

The model of intuitive morality and exemplars (MIME) describes a reciprocal process in which media representation and audiences' moral intuitions, innate moral instincts, continuously influence each other (Tamborini, 2012). The representation of certain moral intuitions in media content affects the evolutionarily adaptive social sensitiveness of audiences, affecting the appraisal of the content and subsequent media selection. The selection preferences of the audiences are

considered in media production: moral intuitions of the audiences recursively affect media content. Therefore, MIME provides a heuristic framework that explains why some media contents are selected and how it affects the cultural values and attitudes of the audiences.

The short-term effect of MIME describes the micro-level process of how moral intuitions presented in media content regulate its appraisal and selection of preferred media content (Eden, 2021). Exemplification theory (Zillmann, 2002) and social intuitionist perspective of morality (Haidt, 2001) underline the short-term effect. Exposure to exemplars increases the temporary accessibility of specific moral intuitions in cognitive processing, which affects judgment and appraisal of media content, such as character and narrative (Zillmann, 2002). Drawing from Moral Foundations Theory (MFT; Haidt, 2007), there are five unique domains of moral intuition that are universally shared and innate. Care and harm (i.e., violation of care) refer to compassion, empathy, concern for the welfare of others. Fairness and cheating (i.e. violation of fairness) are associated with truth, justice, and equity. Loyalty and betrayal (i.e. violation of loyalty) are about ingroup favoritism. Authority and subversion (i.e. violation of authority) are inclinations toward social tradition, institutional hierarchies, and benevolent leadership. Sanctity and degradation (i.e. violation of sanctity) refer to protection against moral disgust and social contamination. MIME has been applied to videos, such as news clips, dramas (e.g., Prahbu et al., 2020), text, such as written news (e.g., Tamborini et al., 2017), and text-image media, such as comic books (e.g. Hahn et al., 2017). However, a moral perspective is not readily applied to the examination of music, most specifically lyrics, with a few exceptions (e.g., Hopp et al., 2019, Hahn et al., 2019).

The short-term effects of MIME (i.e., the impact of media representation on audiences, their selective consumption, and the impact of audiences on media content) are evident in music consumption. According to Ballard et al. (1999), people perceive song lyrics to be influential: an

antisocial message in lyrics is perceived to inspire antisocial behavior. People are not passive listeners of music. They bring in their value framework when listening to and appraising music (Leming, 1987). Therefore, for audiences, the selection of music is a function of personal musical taste. The lyrics of a song reflect not only the artist's first-person claims but also the popularity of particular themes (i.e. social issues) at a given time (Stoia et al., 2018). Therefore, MIME provides a moral perspective on the recursive relationship between the consumption and creation of music.

A. Rap Songs

This study examines how moral content in lyrics explains the stigma of certain music genres. First, this study focuses on rap songs as it uses more direct and less metaphorical expressions compared to other genres, such as heavy metal (Arnett, 1996; Trzcinki, 1992). Although rap songs are beneficial in facilitating emotional development and expression (Dickens & Lonie, 2013), they are criticized for featuring sex, drug, misogyny, and violence (Epstein, Pratto, Skipper, 1990). According to Binder (1993), the expression of profanity and misogyny in rap music dates back to 1985. Concurrent rap songs not only feature drug use and violence but also brags and repression of specific ethnicity (Stoia et al 2018). Considering how the market of rap songs rewards the depiction of violence and toughness (Stoia et al., 2018), rap songs have been subject to censorship due to their antisocial lyrical content (Binder, 1993).

The lyrical content of rap lyrics has at least two real-world repercussions. First, although not fully conclusive, rap lyrics may foster attitudinal and behavioral outcomes. Male participants who were exposed to misogynous rap lyrics found it more comfortable to show sexually aggressive films to women (Barongan & Nagayama Hall, 1995) and had adversarial sexual beliefs (Wester et al., 1997). Second, labeling a song as rap changes people's appraisal of the song. In Ballard et al.'s

study (1999), participants were more likely to consider a lyric to inspire less prosocial behavior when it was labeled as a rap lyric compared to the same lyric being framed as a country or pop song.

Previous literature on rap songs focuses on its consequences without a full understanding of its lyrical content. Focusing on the outcome, without a comprehensive understanding of the descriptive terrain of rap songs may encourage people to advocate censorship for lyrical characteristics that are not unique to rap songs. This study uses MIME as the theoretical framework to better understand the lyrical content of rap songs and how it differs from other popular songs.

In addition to examining the moral content, this study also considers the sentiment and use of profanity in lyrics. These lyrical features not only provide a benchmark to compare the relevance of moral content in lyrics but also reflect previous research on music. Studies have shown that sentiment in lyrics affects the appraisal of the song. According to Böhm et al. (2016), prosocial lyrics, characterized by having more positive sentiment and less profanity,) decrease aggressive thought in the listeners. Therefore, the following research question is asked, and hypotheses are formulated:

RQ1: How does the moral content in the lyrics of the rap song differ from songs of other genres?

H1: Rap songs will have more profanity in the lyrics than songs of other genres.

H2: Rap songs will have more negative sentiment in the lyrics than songs of other genres.

B. Methods

To examine the lyrical differences in rap songs compared to other songs, this research collected a total of 8313 songs using computational methods. First, the researchers built a

purposeful Python script that uses the billboard.py package to collect a list of albums on Billboard's overall end-of-the-year top albums and end-of-the-year top rap albums from 2015 to 2021. Each year's list included 100 albums for the former and 25 albums for the latter. After dropping the duplicates, the title and lyrics of the songs (i.e. tracks) in each of the albums were collected using another purposefully built Python script that uses the lyricsgenius package. The lyrics of the songs that originated exclusively from the list of rap albums were categorized as rap songs. Each lyric was computationally processed for the degree of moral signals, sentiment, and profanity.

C. Measures

This research extracted moral signals in the lyrics by using the eMFD score. eMFD is an extensively validated dictionary-based procedure to extract moral content in textual narratives (Hopp et al., 2021). eMFD is built on a crowdsourced annotation of a large and highly diverse textual corpus by a heterogeneous sample. For each word in eMFD, eMFD provides five vector probability of the word belonging to each of the foundations in MFT and a score that indicates its valence (positive or negative) according to Valence Aware Dictionary and sEntiment Reasoner (VADER: Hutto & Gilbert, 2014). Using the eMFD score, ten moral foundation probabilities are measured for each text data (i.e. lyrics). The mean probabilities of positively valenced words in the text indicate the degree of the moral foundation being upheld (e.g., care, fairness, loyalty, authority, and sanctity foundations), while the mean probabilities of negatively valenced words indicate the violation of the moral foundation (e.g., harm, cheating, betrayal, subversion, degradation). The upholding and violating moral foundations refer to virtue and vice dimensions, respectively.

The positive and negative sentiment of each post is measured using LeXmo, a Python package that uses NRC Emotion Lexicon (NRC Lex). NRC Lex is a widely used crowdsourced dictionary of more than 10,000 English words and their association with emotions and sentiments (Mohammad & Turney, 2013). Positive (negative) sentiment probability for a given text is calculated by taking the number of words with positive (negative) sentiment as indicated in NRC Lex divided by the number of all the words in the examined text. The sentiment score ranges from 0 (weak signal of sentiment) and 1 (strong signal of sentiment).

The use of profanity in the lyrics was measured by calculating the proportion of profanity. Each word in the lyrics was matched to a list of 1616 unique swear words collected from an open-source list of profanity words with a CC0 1.0 Universal public domain license. The number of profanity in the lyrics was divided by the length of the lyrics: 0 indicates that the lyrics have no profanity, and 1 indicates that all the words in the lyrics were profanity.

D. Results and Discussion

To examine the lyrical difference between rap (n = 2063) and other songs (n = 6250), this study conducted a logistic regression with other songs as the referent group. The logistic regression model was statistically significant, χ^2 (14) = 1328 , $p < .001$, McFadden's Pseudo R^2 = .14. A rap song is more likely to include profanity, negative sentiment, and moral content of upholding authority, and less likely to include positive sentiment (See Table 1 for the summary of the logistic regression).

The results indicate that lyrics of rap songs are more likely to feature negative language and discuss moral themes of authority compared to popular non-rap songs. As rap songs are not the only music genre that is stigmatized (e.g., Greenfield et al., 1987; Cheung & Feng, 2021), this

study alone is inconclusive to state that these antisocial lyrical features are unique to rap music. To better understand why certain songs are more likely to be subject to censorship than others, the following study expands the musical genre to include, rap, heavy metal, rock, pop, and others, cross-validates findings from the Billboard dataset with the iTunes dataset, and applies MIME by examining how lyrical content influences the moral expressions of the audiences (as captured in their reviews).

III. Study 2

A. Rock and Heavy Metal Songs

Along with rap songs, rock, and heavy metal are two other genres that have received criticisms for their explicit lyrical content decades before rap's global popularity. Rock has been targeted for public criticism for containing sexual and violent content in its lyrics (Brown & Campbell, 1986; McDonald, 1988; Steinem, 1988). Previously, young adults reported that they enjoyed rock for its lyrics that promote homicide, suicide, and Santantic practices (Wass et al., 1989). As rock music can be misunderstood by younger audiences (Greenfield et al., 1987) and around negative emotions (Hansen & Hansen, 1990), rock historically has been under criticism. Research on the lyrical content of rock sharply decreased after 2000. This study revisits rock songs to examine whether the concern in the past still holds today.

Similar to rap songs, heavy metal songs feature extreme rebellion, violence, suicide, homicide, substance abuse, Satanism, and sexual promiscuity (Richmond & Wilson, 2008). Additionally, alienation and retribution are also prevalent in heavy metal songs (Arnett, 1996; Bashe, 1985, Gore, 1987, Trzcinki, 1992). In some extreme cases, heavy metal lyrics include insecurity, loneliness, representation of disgusting objects, valuation of death, and desire for affection (Cheung & Feng, 2021). Considering the violation of morality in its lyrics, studies on

metal songs have documented its negative effect (Lozon & Bensimon, 2014). For instance, people can feel tense and nervous from listening to heavy metal (Rea et al., 2010). In comparison, people reported reduced tension from listening to pop songs. Like rap, a lyric that is labeled as heavy metal is perceived to inspire more antisocial behavior than the same lyric being labeled as a country or pop song.

To build on the first study, this research will examine the lyrical content of songs in different genres. As rap, rock, and heavy metal songs have received criticism for antisocial content in their lyrics, the lyrics of these songs may differ from other non-controversial songs (e.g., pop). According to Rea et al (2010), unlike heavy metal, listening to pop can reduce tension. More recently, popular music has been more hostile towards the use of hard drugs (Markert, 2001). Therefore, rap, rock, and heavy metal songs are more likely to feature antisocial content, characterized by a violation of morality, negative sentiment, and use of swear words.

B. Morality in Audience Appraisal

As delineated in MIME, the moral content in media has consequences: media messages recursively affect the salience of moral intuition and exemplars. A growing body of research demonstrates that exposure to media content featuring a specific intuition can temporarily increase the salience of the intuition in the audience (Eden & Tamborini, 2016). This explains how songs can influence the way one thinks about certain values (Leming, 1987). For instance, exposure to lyrics that glorify violence (which violates care) increases the accessibility of the care foundation in the minds of audiences. When the moral themes in the media message are inconsistent with the moral intuition of the audience, the media content is likely to appraise it more effortfully and enjoy it less (Lewis et al., 2014). The appraisal experience affects subsequent exposure to similar media

content. People may refrain from listing to a song due to their attitudes being inconsistent with the values advocated in the song (Leming, 1987). Therefore, people's moral intuitions affect the appraisal of a song and are affected by the moral content of the song.

E-commerce allows audience appraisals to be digitally documented, which may represent certain moral intuitions that are made salient as a result of media consumption (i.e., listening to music). For instance, customers can leave textual comments, also known as product reviews, and numeric evaluations, also known as ratings about a product (Lackermair et al., 2013). Previous literature on online product reviews examined the sentiment of the reviews (e.g., Chauhan et al., 2020), the helpfulness of the reviews (e.g., Mudambi & Schuff, 2010), and the impact of reviews on sales (e.g., Kaushik et al., 2018). Therefore, it is empirically well-documented that product reviews play a critical role in e-commerce. However, little is examined about the relationship between the content of the product and its review.

This study examines how the moral content in music lyrics affects audience reviews. As postulated in MIME, the moral themes that are emphasized in lyrics influence the salience of moral intuition of the audiences. Consequently, the stronger the moral themes, the stronger the moralization of review comments. Recent evidence suggests that moralized expressions indicate preferences and attitudes are less subject to change, and foster polarization (Ryan, 2017). According to Zhang (2008), product reviews not only illustrate the audience's opinions about the authors of the product but also encode the polarity of the product. People may be inclined to like polarized products as these are considered to be more self-expressive and a stronger indicator of personal taste (Rozenkrants et al., 2017). Extracting the factors that drive polarity and opinion in product reviews is important as these factors can influence the usefulness of the reviews (e.g.,

Zhang & Varadarajan, 2006). Additionally, this study takes a data-drive approach to discover if the lyrical content of songs affects the review ratings.

RQ2: How does the moral content in the lyrics differ across various genres?

H3: Compared to other songs, a) heavy metal, b) pop, c) rock, and d) rap will have more profanity in the lyrics.

H4: Compared to other songs, a) heavy metal, b) pop, c) rock, and d) rap will have more negative sentiment in the lyrics.

H5: Prevalence of moral content in lyrics will lead to stronger moralization in the reviews.

RQ3: How does a) moral foundations and b) genre affect the relationship between moral content in the lyrics and moralization in reviews?

RQ4: Do the moral content in the lyrics relate to the online ratings of the song?

C. Methods

For the second study, the researchers manually collected the title, artist, genre, and Amazon purchase link for the songs that were listed on the top 100 popular rap, pop, heavy metal, rock songs, and well as the overall top 100 songs on popvortex.com, which provides a list of the most popular songs on Apple's iTunes. The data was retrieved in March of 2022. After dropping the duplicates, the lyrical measures were obtained by following the computational procedure as explained in the first study.

To time-efficiently collect the online reviews and ratings of the songs, the researchers developed a virtual web driver using Selenium in Python. For each song, the corresponding Amazon purchase link was visited, and the text reviews and ratings (ranging from 0 to 5) for the songs were retrieved. After analyzing the proportion of moral to nonmoral words in the text

reviews using eMFD score, its average and the average ratings were calculated for each song. Considering how online reviews are polarized and the highest rating score is prevalent (21% in this dataset), the average ratings that received only the highest score is grouped into one category (indicating unanimously perfect ratings): the rest indicates imperfect review ratings.

D. Results and Discussion

The lyrics of 88 heavy metal songs, 93 pop songs, 92 rap songs, 99 rock songs, 55 other songs were used in the following analyses. To examine the difference in moral content across different musical genres, a one-way MANOVA was conducted with the genre as the independent variable and the 13 lyrical measures (10 eMFD scores, two sentiment scores, and one profanity measure) as the dependent variables. The results indicate a lyrical difference in five musical genres, Pillais' Trace = .40, F (4, 52) = 1648, $p < .001$, *partial* $\eta^2 = .28$.

Homogeneity of variance assumption was tested for all the lyrical measures prior to posthoc ANOVAs. The results of a series of Levene's F tests indicate that the assumption was mostly satisfied, even though four out of 13 lyrical measures were statistically significant (See Table 2). Although Levene's F test indicates that the variance associated with moral signals of upholding care, upholding sanctity, and violating loyalty, and profanity score were not homogenous, none of the largest standard deviations were more than four times the size of the corresponding smallest. This indicates robustness in the subsequent ANOVAs (Howell, 2009).

One-way ANOVA on each of the dependent variables was conducted as a follow-up to the MANOVA. As the focus of this study is to make a lyrical comparison between negatively stigmatized musical genres (i.e. pop, rap, rock, and heavy metal) and other songs, a series of posthoc pairwise comparisons with a two-stage step-up procedure to control for false-discovery

rate (Benjamini, Krieger, & Yekutieli, 2006) was conducted with the other genre being the reference group. The results indicate that at least one negatively stigmatized music genre differed from the other genre in terms of virtuous moral signals of care and sanctity, vice moral signals of care, fairness, and sanctity, profanity, and negative sentiment are discussed further (See Table 2 for more). The lyrics of rap and rock songs tend to include more violations of care and profanity. The lyrics of pop songs included more profanity compared to other songs. Heavy metal songs included lyrics that had lower moral signals of upholding care and sanctity, more moral signals of violating care, fairness, and sanctity, and more negative sentiment compared to the other group.

To examine how the prevalence of moral content in lyrics leads to moralization in reviews, linear regression is conducted with lyrical measures as the independent variable and the average proportion of moral to nonmoral words in the reviews of each song as the dependent variable. The results indicate that the lyrical features (regardless of the genre) are not significant predictors of moralization in reviews, F (13, 294) = 1.09, p = .37.

Considering how the moral content in lyrics varies across genres, the moralization in reviews may be related to the lyrical features as a function of genre. Four dummy variables were constructed for rap, rock, pop, and heavy metal with the other genre as the reference group. There are potentially 52 (13 ×4) second-order product terms that measure the interaction between the genre and the lyrical measures. An exploratory and inductive approach was used to uncover the moderating effect of genre on the relationship between moralization in reviews and the lyrical features. This study conducted a backward stepwise regression analysis with 69 predictors (4 dummy variables + 13 lyrical measures + 52 interaction terms). The results indicate that lyrical measures and musical genres are significantly related to moralization in reviews, F (34, 273) = 1.97, p = .002, *adjusted* R^2 = .10 (See Table 3). The reviews are likely to contain more moralized

words for the songs with lyrics that include more virtuous moral signals of care, less virtuous moral signals of sanctity, and less positive sentiment.

The relationships between moralization in reviews and moral signals of care, sanctity, and harm, and positive sentiment changed depending on the genre. To probe the interaction, this research conducted posthoc simple slope analyses. For the other genre, an increase in virtuous moral signals of care increased moralization in reviews (B = 17.08, 95% CI = [0.88, 33.28]). In comparison, an increase in virtuous moral signals of care decreased moralization in reviews of pop songs (B = -23.36, 95% CI = [-32.83, -13.89]). For heavy metal, rap, and rock songs, the effect of virtuous moral signals of care was not significant. For virtuous moral signals of sanctity, the relationship with moralization in the review was negative for other genre (B = -24.09, 95% CI = [-45.23, -2.98]), while positive for pop songs (B = 27.83, 95% CI = [15.16, 40.49]). The reviews of pop songs were less likely to be moralized when the lyrics included more vice signals of care (B = -18.35, 95% CI = [-28.63, -8.06]). Unlike the other genre where positively in lyrics reduced level of moralization in reviews (B = -6.78, 95% CI = [-10.73, -2.83]), the effect of positive sentiment in lyrics was not significantly for rock (B = 0.95, 95% CI = [-1.70, 5.52]) and pop songs (B = 3.59, 95% CI = [-0.61, 7.78]).

As a logistic regression predicting Amazon review ratings without considering the interaction between the lyrical measures and genre was insignificant, χ^2 (13) = -11.60, p = .56, McFadden's Pseudo R^2 = .04, a backward stepwise logistic regression was conducted with 69 predictors. The results indicate that songs that unanimously received rating scores of 5 can be differentiated from others when the genre and lyrical measures are considered, χ^2 (45) = 1222.45, p < .001, McFadden's Pseudo R^2 = .39. More specifically, a song with only the highest ratings on Amazon tends to include profanity words in its lyrics. Unlike other songs, heavy metal songs with

lyrics that uphold care are likely to receive the highest ratings. Heavy metal songs with fewer moral signals of upholding fairness are likely to receive the highest ratings. Compared to other songs, rap songs that feature more virtuous moral signals of loyalty are likely to receive imperfect review ratings.

IV. General Discussion

This study examined the lyrical features of three controversial musical genres from the perspective of MIME. Rap songs and other socially controversial genres (i.e. rock and heavy metal) are lyrically different from other non-controversial genres (including pop songs). Rap song lyrics are characterized to have a higher frequency of profanity, deliver more negative sentiment, and contain different moral themes compared to the less controversial music genres. Like rap, the lyrics of rock songs use more profanity. Heavy metal songs differed the most in their lyrical themes: in addition to more negative sentiment, heavy metal songs tend to feature fewer moral themes that uphold moral foundations (e.g., care and sanctity) but more moral violation in care, fairness, and sanctity. In addition to the differences in lyrical themes, the relationship between the lyrical features and the degree of moralization in reviews and review ratings differed across genres as well. As for rap songs, the audience reviews of songs that feature less care and more positive sentiment increased moralization. The audience reviews of rock songs were more moralized for songs that featured less care, more harm, and more sanctity. As for heavy metal songs, featuring less care and harm, and more sanctity increased the degree of moralization in review comments. Compared to other genres, the Amazon review ratings were higher for heavy metal songs that featured care but not fairness. Rap songs that address upholding loyalty in their lyrics tend to receive lower ratings on Amazon.

This study found that there is variance among the controversial genres. Consistent with the literature, heavy metal differs the most from not controversial genres. The themes of suicide, alienation, and Satanism are frequently featured in heavy metal songs (Arnett, 1996; Bashe, 1985; Gore, 1987; Trzcinki, 1992). As heavy metal tends to feature more extreme antisocial content, they may differ greatly in terms of the moral themes. These lyrical differences are often the evidence for censoring such genres, especially for a younger audience.

Despite its prevalence, music is a relatively less studied media content than other texted-based or audiovisual media content. This is also evident in MIME research (Eden et al., 2021). Examining the lyrical content and the audience appraisal of the songs from a moral perspective bridges the gap in the literature. Dinder (1993) found that writers of rap songs are inclined to adhere to a specific theme. According to MIME, the adherence may be due to the recursive interaction between the media content creator (the songwriters) and the consumers (the audiences).

This study also builds on the literature on product reviews. Previous research on product reviews tends to focus on the content of the reviews and their relationship to perceived helpfulness (e.g., Lackermair et al., 2013; Mudambi & Schuff, 2010). This study takes a step further by integrating the product's features (i.e. lyrics of the songs) to predict audience appraisal of the product (i.e. expression of moralization in reviews and product ratings). The degree of moralization in the reviews indicates that the audience is likely to have a moralized attitude towards the song. As moral attitudes are closely related to one's identity (Aquino & Reed, 2002, Strohmiger & Nichols, 2014), people are less likely to change their opinions about it (Armovich et al., 2012). Therefore, moralization describes the degree of strong personal connection with the product (Zhang, 2008).

This study is not without limitations. The stigmatization of a specific genre may stem from its lyrics and how the song is portrayed in other media. For instance, other modalities, such as audio features (i.e. rhyme and beats) and visual images accompanying the song (i.e. album cover and music videos) can affect its appraisal. According to Swaminathan (2015), in addition to recognizing emotions in music, the available evidence confirms that listeners also experience emotions in response to music. However, mechanisms of emotion induction are not well understood, so different beats and rhymes' psychological effects on their listeners is debatable. However visual images' psychological impact on listeners is comparatively more studied. According to Greenfield et al. (1987), rock music videos hindered the imagination of their listeners. This study also calls for a hybrid approach to evaluating lyrical content. For instance, Hahn et al. (2019) sampled a selection of songs from a wide range of albums for human coding. Although the computational extraction of lyrical themes drastically increases the sample size, it does not fully encapsulate how people appraise the songs in a naturalistic setting. Therefore, future studies can continue to study music, a highly overlooked media content, by incorporating both manual and computational coding.

References

Böhm, T., Ruth, N., & Schramm, H. (2016). “Count on Me” - The influence of music with prosocial lyrics on cognitive and affective aggression. *Psychomusicology: Music, Mind, and Brian*, 26(3), 279-283.

Ballard, M. E., Dodson, A. R., & Bazzini, D. G. (1999). Genre of music and lyrical content: Expectation effects,. *The Journal of Genetic Psychology*, *160(*4), 476-487. https://doi.org/10.1080/00221329909595560.

Binder, A. (1993). Constructing Racial Rhetoric: Media Depictions of Harm in Heavy Metal and Rap Music. *American Sociological Review, 58*(6), 753–767. https://doi.org/10.2307/2095949

Brown, D., & Campbell, K. (1986). Race and gender in music videos: The same beat but a different drummer. *Journal of Communication, 36*(1), 94-106. https://doi.org/10.1111/j.1460-2466.1986.tb03035.x

Chauhan, U.A., Afzal, M.T., Shahid, A. Abdar, M., Basiri, M. E., & Zhoum X. (2020). A comprehensive analysis of adverb types for mining user sentiments on amazon product reviews. *World Wide Web, 23*, 1811–1829 https://doi.org/10.1007/s11280-020-00785-z

Cheung, J. O., & Feng, D. (2021). Attitudinal meaning and social struggle in heavy metal song lyrics: a corpus-based analysis. *Social Semiotics, 31*(2), 230-247.

Coutinho, E., & Scherer, K. R. (2017). The effect of context and audio-visual modality on emotions elicited by a musical performance. *Psychology of Music*, *45*(4), 550-569. https://doi.org/10.1177/0305735616670496

Dickens, L., & Lonie, D. (2013). Rap, rhythm and recognition: Lyrical practices and the politics of voice on a community music project for young people experiencing challenging

circumstances. *Emotion, Space and Society*, *9*(1), 59-71. https://doi.org/10.1016/j.emospa.2012.11.003

Eden, A., & Tamborini, R. (2016). Moral intuitions: Morality subcultures in disposition formation. *Journal of Media Psychology, 29*(4), 198–207. https://doi.org/ 10.1027/1864-1105/a000173

Eden, A., Tamborini, R., Aley, M., & Goble, H. (2021). Advances in Research on the Model of Intuitive Morality and Exemplars (MIME). In P. Vorderer, & C. Klimmt (Eds), *The Oxford handbook of entertainment theory*. (pp. 231-250). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190072216.013.13.

Ekinci, O., Bez, Y., Sabuncuoglu, O., Berkem, M., Akin, E., & Imren, S. G. (2013). The association of music preferences and depressive symptoms in high school students: A community-based study from Istanbul. *Psychology of Music, 41*(5), 565–578. https://doi.org/10.1177/0305735612440614

Epstein, J. S., Pratto, D. J., & Skipper Jr., J. K. (1990). Teenagers, behavioral problems, and preferences for heavy metal and rap music: A case study of a southern middle school. *Deviant Behavior, 11(*4), 381-394, https://doi.org/10.1080/01639625.1990.9967860

Hahn, L. & Tamborini, R. (2020). Research on the Model of Intuitive Morality and Exemplars. In J. Van den Bulck (Ed.), *The international encyclopedia of media psychology*. WileyBlackwell. https://doi.org/10.1002/9781119011071.iemp0177.

Hahn, L., Tamborini, R., Klebig, B., Novotny, E., Grall, C., Hofer, M., & Lee, H. (2019). The representation of altruistic and egoistic motivations in popular music over 60 years. *Communication Studies, 70*(1), 59-78. https://doi.org/10.1080/10510974.2018.1447493

Hansen, C. H., & Hansen, R. D. (1990). The Influence of Sex and Violence on the Appeal of Rock Music Videos. *Communication Research, 17*(2), 212–234. https://doi.org/10.1177/009365090017002004

Hopp, F. R., Barrel, A., Fisher, J. T., Cornell, D., Lonergan, C., & Weber, R. (2019, May 24-28). "I believe that morality is gone": A large-scale inventory of moral foundations in lyrics of popular songs [Paper presentation]. The 69th Annual Convention of the International Communication Association, Washington, DC, USA.

Howell, D. C. (2007). *Statistical methods for psychology*. Thompson Wadsworth.

Juslin, P. (2005) From Mimesis to Catharsis: Expression, Perception, and Introduction of Emotion in Music. In Miell, D., MacDonald, R. and Hargreaves, D. J. (Eds.), *Musical communication*, (pp. 85-109). Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780198529361.003.0005

Kaushik, K., Mishra, R., Rana, N. P., & Dwivedi, Y. K. (2018). Exploring reviews and review sequences on e-commerce platform: A study of helpful reviews on Amazon. in. *Journal of Retailing and Consumer Services, 45*, 21-32.

Kistler, M. E., & Lee, M. J. (2009). Does exposure to sexual hip-hop music videos influence the sexual attitudes of college students?. *Mass Communication and Society, 13*(1), 67-86. https://doi.org/10.1080/15205430902865336

Lackermair, G., Kailer, D., Kanmaz, K. (2013). Importance of Online Product Reviews from a Consumer's Perspective. *Advances in Economics and Business, 1*(1), 1 - 5. https://doi.org/10.13189/aeb.2013.010101.

Levitin, D. J. (2006). *This is your brain on music: The science of a human obsession.* Penguin.

Lewis, R. J., Tamborini, R., & Weber, R. (2014). Testing a dual-process model of media enjoyment and appreciation. *Journal of Communication, 64*(3), 397–416. https://doi.org/10.1111/jcom.12101

Lozon, J., and Moshe B. (2014). Music Misuse: A review of the personal and collective roles of 'problem music'. *Aggression and Violent Behavior, 19*(3), 207–218. https://doi.org/10.1016/j.avb.2014.04.003

Markert, J. (2001). Sing a song of drug use-abuse: Four decades of drug lyrics in popular music--from the sixties through the nineties. *Sociological Inquiry, 71*(2), 194–220. https://doi.org/10.1111/j.1475-682X.2001.tb01108.x

McDonald, J. R. (1988). Censoring rock lyrics: A historical analysis of the debate. *Youth & Society, 19*(3), 294–313. https://doi.org/10.1177/0044118X88019003004

Mudambi, S. M., & Schuff, D. (2010). Research note: What makes a helpful online review? A study of customer reviews on Amazon. com. *MIS quarterly*, *34*(1), 185-200. https://doi.org/10.2307/20721420

Rafalovich, A., & Schneider, A. (2005). Song lyrics in contemporary metal music as counter-hegemonic discourse: An exploration of three themes. *Free Inquiry in Creative Sociology, 33*,(2), 131–142.

Rea, C., MacDonald, P., & Carnes, G. (2010). Listening to classical, pop, and metal music: An investigation of mood. *Emporia State Research Studies, 46*,(1), 1–3.

Rozenkrants, B., Wheeler, S.C., & Shiv, B. (2017). Self-Expression Cues in Product Rating Distributions: When People Prefer Polarizing Products. *Journal of Consumer Research, 44*, 759-777.

Ryan, T. J. (2017). No compromise: Political consequences of moralized attitudes. A*merican Journal of Political Science, 61*(2), 409-423. https://doi.org/10.1111/ajps.12248

Seidel, A., & Prinz, J. (2013). Mad and glad: Musically induced emotions have divergent impact on morals. *Motivation and Emotion, 37*(3), 629-637. http://dx.doi.org/10.1007/s11031-012-9320-7

Steinem, G. (1988). Six great ideas that television is missing. In S. Oskamp (Ed.), T*elevision as a social issue: Applied social psychology annual issue,* (pp.18-29). Sage.

Stoia, N., Adams, K, & Drakulich, K. (2018). Rap lyrics as evidence: What can music theory tell us? *Race and Justice, 8*(4), 330-365. https://doi.org/10.1177/2153368716688739

Swaminathan, S., & Schellenberg, E. G. (2015). Current emotion research in music psychology. *Emotion review, 7*(2), 189-197. https://doi.org/10.1177/1754073914558282.

Prabhu, S., Hahn, L., Tamborini, R., & Grizzard, M. (2020). Do morals featured in media content correspond with moral intuitions in media users?: A test of the MIME in two cultures. J*ournal of Broadcasting & Electronic Media, 64*(2), 255-276. https://doi.org/10.1080/08838151.2020.1757364

Tamborini, R. (2012). A model of intuitive morality and exemplars. In R. Tamborini (Ed.), *Media and the moral mind,* (pp.67-98). Routledge.

Tamborini, R., Hofer, M., Prabhu, S., Grall, C., Novotny, E., Hahn, L., & Klebig, B. (2017). The impact of terror attack news on moral intuitions and moral behavior towards outgroups. *Mass Communication and Society, 20,* 800–824. https://doi.org/10.1080/15205436.2017.1342130

Wass, H., Miller, M. D., & Stevenson, R. G. (1989). Factors affecting adolescents' behavior and attitudes toward destructive rock lyrics. *Death Studies, 13*(3), 287–303. https://doi.org/10.1080/07481188908252305

Wester, S. R., Grown, C. L., Quatman, G. L., Heesacker, M. (1997). The influence of sexually violent rap music on attitudes of men with little prior exposure. *Psychology of Women Quarterly, 21,* 497-508.

Zhang, Z. (2008). Weighing stars: Aggregating online product reviews for intelligent e-commerce applications. *IEEE Intelligent Systems, 23*(5), 42-49. https://doi.org/10.1109/MIS.2008.95

Zhang, Z., & Varadarajan, B. (2006). Utility scoring of product reviews. In P. S. Yu (Ed.), *Proceedings of the 15th ACM international conference on Information and knowledge management* (pp.51-57). Association for Computing Machinery. https://doi.org/10.1145/1183614.1183626

Zillmann, D. (2002). Exemplification theory of media influence. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp.19–41). Erlbaum

Table 1

Summary of Logistic Regression Comparing Rap Lyrics to Non-rap Lyrics

	B	*SE*	*Z*	Odd Ratio
Intercept	6.188	28.602	0.216	486.93
Year on Billboard	-0.004	0.014	-0.268	1.00
Virtue Care	-2.172	2.695	-0.806	0.11
Fairness	-0.612	2.934	-0.209	0.54
Loyalty	-2.465	3.319	-0.743	0.09
Authority	7.981	3.450	2.313*	> 100
Sanctity	-3.224	2.927	-1.102	0.04
Vice Care	-1.255	2.318	-0.542	0.28
Fairness	0.903	2.565	0.352	2.47
Loyalty	-2.494	3.328	-0.749	0.08
Authority	-0.167	3.085	-0.054	0.85
Sanctity	0.658	2.864	0.230	1.93
Profanity	24.302	0.958	25.380***	> 100
Positive Sentiment	-15.194	-1.350	-11.256***	< .001
Negative Sentiment	9.457	1.329	7.115***	> 100

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2
Summary of a Series of ANOVA and Posthoc Pairwise Comparision of Lyrical Measures by Genre

		Levene's *F*		ANOVA	Mean (Standard Deviation)				
		F	*p*		Other	Rap	Pop	Rock	Heavy Metal
Virtue	Care	2.85	**.024**	***F* (4, 303) = 4.81, *p* < .001**	0.041 (0.02)	0.04 (0.01)	0.045 (0.03)	0.042 (0.03)	**0.03 (0.02)**
Fairness		0.71	.583	*F* (4, 303) = 1.35, *p* = .253	0.04 (0.01)	0.039 (0.01)	0.042 (0.02)	0.043 (0.02)	0.038 (0.02)
Loyalty		2.31	.058	***F* (4, 303) = 3.32, *p* = .011**	0.05 (0.02)	0.046 (0.01)	0.055 (0.02)	0.053 (0.02)	0.045 (0.02)
Authority		2.04	.088	*F* (4, 303) = 0.96, *p* = .430	0.037 (0.01)	0.037 (0.01)	0.039 (0.01)	0.04 (0.02)	0.035 (0.02)
Sanctity		4.14	**.003**	***F* (4, 303) = 7.06, *p* < .001**	0.041 (0.02)	0.037 (0.01)	0.043 (0.02)	0.039 (0.02)	**0.03 (0.01)**
Vice	Care	1.35	.253	***F* (4, 303) = 8.29, *p* < .001**	0.067 (0.02)	**0.077 (0.02)**	0.068 (0.02)	**0.075 (0.02)**	**0.088 (0.03)**
Fairness		1.21	.305	***F* (4, 303) = 5.02, *p* < .001**	0.052 (0.02)	0.059 (0.01)	0.05 (0.02)	0.054 (0.02)	**0.062 (0.02)**
Loyalty		4.97	**.001**	***F* (4, 303) = 2.75, *p* = .028**	0.044 (0.01)	0.049 (0.02)	0.043 (0.02)	0.045 (0.02)	0.051 (0.02)
Authority		1.74	.142	***F* (4, 303) = 3.90, *p* = .004**	0.048 (0.01)	0.05 (0.01)	0.046 (0.01)	0.049 (0.02)	0.056 (0.02)
Sanctity		1.85	.119	***F* (4, 303) = 7.75, *p* < .001**	0.05 (0.02)	0.056 (0.01)	0.051 (0.02)	0.055 (0.02)	**0.064 (0.02)**
Profanity		6.59	**< .001**	***F* (4, 303) = 14.39, *p* < .001**	0.029 (0.03)	**0.046 (0.03)**	**0.015 (0.02)**	**0.019 (0.02)**	0.027 (0.03)
Positive		1.43	.224	*F* (4, 303) = 1.85, *p* = .120	0.042 (0.04)	0.033 (0.02)	0.04 (0.03)	0.045 (0.03)	0.04 (0.03)
Negative		2.21	.068	***F* (4, 303) = 7.56, *p* < .001**	0.032 (0.02)	0.037 (0.02)	0.023 (0.02)	0.032 (0.03)	**0.044 (0.03)**

Note. Pairwise comparisons are conducted with the other genres as the reference group. Statistical significance is indicated in bold.

Table 3

Summary of Backward Stepwise Regression Predicting Moralization in Amazon Reviews

		Moralization in Reviews				Dummy Coded Average Review Rating				
		β	*B*	*SE*	*t*		*B*	*SE*	*Z*	Odd Ratio
Intercept		0.00	2.09	0.57	3.65***	Intercept	-9.11	5.46	-1.67	< .001
Virtue Care		0.85	17.08	8.23	2.08*	Profanity	19.20	7.90	2.43*	> 100
Virtue Sanctity		-0.88	-24.09	10.74	-2.24*	Virtue Care × Heavy Metal	102.70	48.03	2.14*	> 100
Positive		-0.43	-6.78	2.01	-3.38***	Virtue Fairness × Heavy Metal	-116.70	58.71	-1.99*	< .001
Virtue Care	× Heavy Metal	-0.67	-19.88	9.37	-2.12*	Virtue Loyalty × Rap	-194.60	97.54	-2.00*	< .001
	× Pop	-1.92	-40.44	9.53	-4.24***					
	× Rap	-0.84	-20.68	9.70	-2.13*					
	× Rock	-1.14	-21.90	8.94	-2.45*					
Virtue Sanctity	× Heavy Metal	0.88	28.39	11.85	2.40*					
	× Pop	2.21	51.92	12.52	4.15***					
	× Rock	1.25	28.44	11.94	2.38*					
Vice Care	× Heavy Metal	-1.52	-23.67	9.18	-2.58*					
	× Pop	1.74	35.74	12.25	2.92**					
Positive	× Pop	0.47	10.37	2.93	3.54***					
	× Rap	0.30	7.73	3.15	2.45*					
	× Rock	0.48	8.69	2.72	3.20*					

Note. * $p < .05$, ** $p < .01$, *** $p < .001$