The songs of my people: appraisal differences of popular music as a function of ideology

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ABSTRACT

Music powerfully engages brain and mind, yet remains largely underutilized as experimental stimulus material. Here, we wondered how ideological differences manifest in terms of musical preferences. To explore this question, we studied a large sample of research participants by exposing them to a representative corpus of musical stimuli while also eliciting their ideological position. Doing so, we found that ideological differences are linked to specific signatures of musical appraisal - there are significant genre-based differences in self-reported listening behavior as well as appraisal differences in how people with different ideological affiliations experience the music when listening to it. This effect is strong: ideology can be used to predict whether an ambiguous stimulus in terms of valence - e.g. country music – is experienced as aversive or enjoyable. As political preferences affect aesthetic judgments, we conclude that ideological positions are more deeply rooted than suggested by a discourse model of political exchange.

INTRODUCTION

The American political climate has become increasingly polarized in recent years. Both sectionalism and political divisiveness have reached generational highs, with historians and psychologists alike pointing out the potential for such conflict to turn violent (Mason, 2018; Miller, 1999). As such, understanding the nature of political disagreement is critical to democratic stability: if we are to effectively prevent the fragmentation of our society, we must first understand the roots of political disagreement. Should ideology be embedded so deeply that partisan beliefs are capable of shaping our very cognitions and perceptions, it is unlikely that related political conflict can be addressed verbally. If this is the case, common strategies for reducing political polarization, which traditionally focus on interpersonal debate and structured communication, may be less meaningful than previously accepted.

Effective strategies for mitigating and reducing political conflict traditionally rely on structured verbal communication among dissenting parties. The dominant model for ideological conflict resolution has long been Jurgen Habermas's "Discourse Model". The discourse model espouses Habermas's theory of communicative action: consensus can be achieved among conflicting parties if both engage in "unrestricted deliberation" (Habermas, 1981). Importantly, this model rests upon the assumption that the reasons underlying such conflict can be readily verbally accessed, assuming that, of course, they can be accessed at all. Furthermore, communicative action theory presumes individuals communicate in good faith and are capable of discussing disagreement truthfully and accurately. However, it is unlikely that such interactions are impervious to impression management tactics and other argumentative strategies involving deception (Schlenker, 1980). Furthermore, the rise of informal social networks has sparked an increase in the circulation of facts and information available for popular consumption; however,

such information often goes unchecked, resulting in a prevalence of inconsistent “facts” which are unlikely to be recognized as such in unmoderated interpersonal debate (Fergusson, 2018). In the globally connected world of today, more and more of our daily interactions take place online, where deception is not only prevalent, but assumed to be the norm (Toma, Jiang, & Hancock, 2016; Drouin et al., 2016; Caspi & Gorsky, 2006). In this sense, it is reasonable to consider the possibility that individuals involved in political discourse engage in some degree of impression management, particularly when such debates do not occur face to face.

Still, both political and psychological scientists have found support for several practical applications of the Habermas theory. Research conducted on the effects of canvassing has found support for the role of discourse in mediating differing political views (Green, Gerber & Nickerson, 2003). Similarly, recent fMRI applications of the discourse model have also linked communicative action to the temporal pole, precuneus, and superior temporal sulcus: regions commonly associated with moral reasoning (Schaefer, Heinze, Rotte, & Denke, 2013). While the discourse model has garnered significant support among philosophers and psychologists alike, its fundamental set of assumptions—that conflict can be verbally expressed and deliberated, and that people also communicate in good faith — remains largely understudied.

Should the Habermas model hold and ideology is indeed malleable on a verbal level, one would not expect ideology to impact individual perceptions or cognitions. Yet, perceptual differences seem to be inherently influenced by ideology. Researchers have investigated the relationship between ideology and perception of political candidates (Ksiazkiewicz, 2017) as well as the neural correlates of party identification (Jost, 2014) to suggest that appraisal of visual images may be moderated by ideology. However, these studies predominantly rely on stimuli that are entirely unambiguous: for instance, an image of a Democratic leader is declarative in

nature and far from neutral, i.e. inherently politically charged. Therefore, our research aims to test the Habermas model by examining the ways in which ideology might manifest in terms of individual perception when such external influences are removed.

In recent years, cognitive and music psychologists have identified the use of music as an evocative, yet highly versatile experimental stimulus. Studies have utilized music to probe emotional responses (Juslin et al., 2008) personality (Dollinger, 1993), attention, and even physical health and well-being (MacDonald, Kreutz, & Mitchell, 2012). Other studies have focused on the ways in which music operates as a cultural marker across various social contexts: Zillman & Bhatia (1989) found that information disclosed about an individual's music preferences influenced person perception and perceived attractiveness; furthermore, genre-level preferences activated specific stereotypes about the listener. Music also facilitates group cohesion (Cross, 2005) and enhances cognitive performance (MacDonald, Kreutz, & Mitchell, 2012), suggesting music may play a dual role as a mechanism that operates across both cultural and cognitive domains.

The widespread use of music as an experimental probe is justified: the properties of music as a stimulus material lend themselves exceptionally well to research. When musical excerpts are specifically presented in a neutral, unlabeled, environment, there is no obvious social desirability component—in other words— if secondary identifiers are absent, participants are less likely to engage in impression management otherwise elicited by peripheral social markers or cues (Bolino et al., 2008). This quality of music lends itself particularly well to the study of political preference. While an image of George W. Bush or Barack Obama (Jost, 2014) is inherently politically charged, music presented in an uninformative, controlled setting is not recognizably political in nature, thus mitigating the potential for desirability bias effects.

While many studies rely on various measures of physiological arousal to address similar self-report concerns, the process of integrating physiological responses into an experimental paradigm is often costly and exhaustive (Green et al., 1985). In contrast, music is relatively cost-effective and easily deployable across a range of laboratory and in-field environments—in terms of flexibility, music harbors a significant advantage over such measures. Furthermore, responses elicited by musical clips are reliable and unbiased: Wallisch & colleagues (in review) found that stimuli presented for as little as 5 seconds were psychologically representative of entire songs. As clip and song appraisals are highly correlated ($R = .946$), the use of musical clips enables researchers to expose participants to a wider range of experimental stimuli in a shorter amount of time.

Furthermore, there is sufficient evidence that musical preference is largely unique to the individual. The appraisal of musical pieces has been shown to be surprisingly idiosyncratic, akin to a projective test (Schulkind et al., 1999; Jänke, 2008). This effect is strong: one's preferences for popular music are even more distinctive than one's taste in movies (Wallisch & Whritner, 2017).

In this study, we made use of the unique features of music to examine the extent to which ideology moderates aesthetic appraisal. By presenting neutral musical stimuli to participants within an isolated laboratory setting, we aimed to separate perceptual differences from social influences in order to attain a measure of music taste free from desirability effects. In doing so, we were able to examine ideologically-linked appraisal patterns across both genres and individual songs. While listening to these songs, we asked study participants to rate the music in terms of how much they liked each piece, as well as how familiar they were with it. We also elicited their political affiliation and probed their general music listening habits. We then

conducted a reclassification machine learning analysis to test the accuracy with which the music listening patterns observed in our study could predict ideology.

If ideological position is both superficial and verbal in nature, we would not expect various ideologies to be linked to specific patterns of musical preference. However, if ideology moderates music appraisal, it is possible that ideology may be so deeply held that it determines perception itself. Furthermore, if music taste can be used to accurately predict ideology, our results may be able to provide a novel method of gauging political affiliation. Current probes for political orientation generally rely on self-report measures, which are often times inconsistent, and reflect respondents' social desirability biases (Bolino et al., 2008). Such inconsistencies have been at the root of large-scale political upsets: the discrepancy between self-report polling data and voter behavior, termed the "Bradley effect", is thought to have contributed to the unforeseen loss of democratic presidential candidate Hillary Clinton in 2016 (Payne, 2010). If we are able to identify music taste as a reliable predictor of ideology, music preference may be able to serve as an innocuous measure of political identification, thereby providing a measure of ideological orientation invulnerable to such desirability biases. To our knowledge, this is the first time that aesthetic judgments of music have been studied through the lens of political disagreement. The findings from this study will add to a growing body of research addressing the nature of disagreement, which is an urgent issue due to rapidly increasing levels of partisanship, a divisive political climate and ideological conflict in general.

METHOD

Participants

Our sample consisted of New York University students as well as residents of the greater New York City area. Participants were recruited via posted flyers, the NYU SONA participant

pool, email lists, or the NYU SONA battery. Participants received compensation for completion of a single in-house two-hour experiment in the form of either course credit or \$20. There were no population differences observed across any of the measures included in this study: there were no observed differences in individual response data as a function of compensation. To ensure statistical power needs were met, we recruited a large and diverse sample of participants ($n = 576$). However, the majority of our participants self-identified as liberal ($n = 346$) with few identifying as conservative ($n = 22$), moderate ($n = 116$), independent ($n = 52$), or other ($n = 40$), which may be partly attributed to geographical constraints and the university setting in which the experiment took place. In order to address concerns stemming from low statistical power, we grouped participants as either ‘liberal’ ($n = 346$) or ‘non-liberal’ ($n = 230$) according to self-reported ideology. The non-liberal group was comprised of those that identified as either conservative, moderate, or an ‘other’ ideology not listed. This grouping was used for both the song-level analysis and the machine-learning classification.

Exclusion Criteria

653 subjects were recruited for this experiment. Data from 576 (88.2%) of subjects was retained for analysis: 15 subjects were excluded due to missing or incomplete data and 13 subjects did not complete the demographic survey and were therefore excluded. 49 participants were shown to have “just clicked through” the task. This criterion was determined by correlating each participant’s average appraisal for each song presentation across odd and even-numbered trials. Subjects with an internal consistency below 0.4 were excluded from further analysis.

Materials: Music Stimuli

Musical stimuli were selected to showcase a diverse yet representative range of genres and time periods. 260 songs were selected in total, including 152 songs from the *Billboard* music

charts, 52 “obscure” songs previously utilized in music experiments (see Rentfrow & Gosling, 2003), and 56 “iconic” songs selected by a panel of musical experts to represent one of the 8 genres included in the experiment (classical, country, electronic, jazz, popular, rap/hip-hop, rock, and R&B/soul.) Music appraisal and familiarity were elicited for both clips and songs, as intra-song appraisal reliability is extremely high at $R = 0.946$, $p = 2.39\text{e-}125$ (Wallisch & Philbotte, *in review*).

Materials: Personality Measures and Economic Decision-Making

After each music trial, participants were presented with either an item from a personality questionnaire or a brief temporal decision-making task. This interruption served as a “palate cleanser” and was implemented to reorient attention as well as mitigate any potential carryover or contrast effects resulting from direct stimulus comparison. Participants either responded to a personality question drawn at random from the NEO-PI, otherwise known as the “Big Five” personality assessment (Costa, 1992) or completed an economic choice task (see Glimcher & Kable, 2007) in which they were asked to decide between receiving an immediate or delayed monetary reward of respectively varying magnitude. The type of measure following each musical presentation was determined at random.

Presentation

Participants listened to auditory stimuli constructed with MATLAB 2016a via Bose headphones in a computer laboratory. Participants were exposed to 12 full songs randomly picked from the original 260 available stimuli, four sets of 5, 10, and 15 second clips selected from each of the 12 full songs, and 36 additional randomly selected 5, 10, or 15-second clips selected from a total of 260 stimuli. After each stimulus presentation, participants were asked to rate the music in terms of familiarity and appraisal. Participants indicated appraisal selections by

choosing an option from a 7-point Likert scale (“Hate it,” “Strongly dislike it,” “Slightly dislike it,” “Indifferent,” “Slightly like it,” “Strongly like it,” “Love it”). Participants similarly indicated how familiar they were with each clip or song presentation by reporting whether or not they were able to “Recognize the song”, “Recognize the artist”, or “Recognize both”.

Procedure

Participants were presented with 192 clips and songs selected from 260 available stimuli and asked to rate each item in terms of Likert-scaled familiarity and appraisal. Musical stimuli were presented at random to mitigate exposure effects, and each trial was followed by either an item from the NEO-PI personality measure or a brief temporal decision task. Ideological position was elicited via completion of a demographic form prior to the experiment. All procedures were approved by the New York University Institutional Review Board, the University Committee on Activities Involving Human Subjects (UCAIHS).

Task Schematic

RESULTS

Does ideology moderate popular music preference, and if so, can music taste be used to predict one’s political ideology? To answer this question, we compared liberal and conservative appraisal, familiarity, and self-reported listening behavior across genres (*see Figs. 1-4*), conducted a mean-difference comparison to compare differences in individual clip/song

appraisal across ideology (*see Fig. 5a-5d*), and implemented a re-classification machine-learning analysis (MLA) to determine the extent to which musical appraisal can be used as a proxy for ideological affiliation (*Fig. 6a-6b*).

It is important to note that at this time, we do not report p-values or statistical significance for the following results. Indeed, our results depict apparent differences in familiarity and appraisal, suggesting pronounced effects; however, our small conservative sample size raises statistical power concerns that lessen the validity of any significance values reported here. With the strikingly high prevalence of statistical misreporting in the psychological sciences (*see Head et al., 2019; Bruns & Loannidis, 2016; Simonsohn, Simmons, & Nelson 2015*) we chose to address this concern by substituting significance with a thorough report of our findings and the trends observed; we are not alone in adopting this strategy (*see Amrhein, Greenland, & McShane, 2019*).

Genre-based Differences

Average appraisal and familiarity scores differed for both liberal and non-liberal groups across the seven genres presented during the study (*Figs. 1-4*), which suggests that ideological differences manifest as unique “signatures” of listening behavior, familiarity, and appraisal. Interestingly, self-reported music listening preferences were not correlated with appraisal ratings elicited during the experiment. For instance, although twice as many individuals self-identifying as liberal claimed to regularly listen to R&B music compared to those identifying as conservative, liberal individuals were no more familiar with R&B than either moderate or conservative groups. Similarly, no differences in R&B appraisal were observed across ideological categories: liberal, moderate, and conservative appraisal ratings of R&B music were all similar to an indistinguishable degree. Similar inconsistencies were observed with country

music: although liberally-identifying participants claimed to listen to country music with far lesser frequency than conservative participants, when exposed to such pieces during the study, liberals rated country music much more highly than conservatives. This is particularly fascinating given the ways in which music functions as a cultural identifier— it is possible that participants reported music listening preferences while trying to respond in a way that was socially desirable, even if these responses did not align with their true preferences. However, it remains unknown whether individuals engage in such behavior consciously: it is entirely plausible that individuals are unable to separate the social aspects of music from personal preference. In this sense, our findings question the extent to which individuals are aware of their own true aesthetic tastes, as well as the impact of social influence on developing preference.

Song-level Differences

To examine whether appraisal patterns observed across genres exist at the individual song level, mean differences in appraisal were calculated for each of the 260 musical stimuli. In order to address power concerns arising from a small conservative sample, here we combined conservative and moderate groups to operationalize ideology as either ‘liberal’ or ‘non-liberal’. In doing so, we found that specific appraisal patterns did not only exist across genres: large differences in appraisal were also observed for songs on the individual level (*Figs. 5a-5d*). The rap song “Gold Digger” by artist Kanye West was the most polarizing song among those included in this study and preferred by liberals to a much greater degree in comparison to non-liberals ($MD = 1.11$). “Gold Digger” was followed by “Hypnotize”, a rap single by artist Biggie Smalls that occupied the US *Billboard* 100 top spot in 1997. This song was also preferred highly by liberals, with a liberal-conservative appraisal mean difference of 1.01. The most polarizing song preferred by non-liberals was “The Chipmunk Song (It’s Christmas Don’t Be Late)”, a

Christmas comedy-pop song performed by a cartoon band of “chipmunks” sporting distinctively high-pitched voices. Given that many of the most polarizing songs in our sample were rap songs, and that these songs were largely preferred by liberals, this finding poses noteworthy questions regarding the relationship between the sonic qualities of a musical piece and resultant appraisal. It is possible that structural and tonal characteristics of a song may moderate appraisal across ideology: for instance, liberals may prefer music classified by Rentfrow and colleagues as containing “urban” and “intense” factors: this music is forceful in nature and characterized by strong beats and heavy percussion often found in rap and funk (Rentfrow, 2011).

In addition to identifying the most divisive songs, we also examined the songs that produced the least polarizing responses. In doing so, we found that many of these songs were either classical or jazz pieces that were largely instrumental in nature: liberal and conservative appraisals rarely differed for a number of symphonies, quintets, and orchestral pieces including “Je Vous Pri Que J'Aye un Baysier” by classical composer Richard Loqueville, Louise Farrenc’s “Piano Quintet No. 1 in A Minor”, and Mozart’s “Requiem in D Minor”. This pattern could be due to the structural composition of the pieces themselves: it is possible that vocals and lyricism drive the polarizing effects observed across many of the rap and R&B pieces included in our sample. As such, the instrumental nature of classical and jazz music could be perceived as more neutral in valence, and therefore less likely to elicit strongly divisive responses.

Reclassification Analysis

To determine the degree to which musical appraisal could be predictive of ideological position, we used mean appraisal differences for each musical stimulus to conduct a machine-learning re-classification analysis. Our model calculated the dot product of each unique musical judgement (UMJ) and appraisal spread for each clip to re-classify the ideology of participants

according to their reported appraisal for each stimulus (*Fig. 6a-b*). Reclassification yielded a classification accuracy of 71.5%, suggesting that about 71.5% of individuals could be correctly ideologically classified based on their unique appraisals of songs.

These results present two surprising findings. First, ideological alignment moderates differences in average musical appraisal across genres. Observed differences suggest that, consistent with our initial hypothesis, ideological differences manifest in terms of distinct patterns of listening behavior, familiarity, and appraisal. These differences were not only observed across genres: noteworthy differences in appraisal were also observed for songs on the individual level. Taken together, these results suggest that ideological position is far more deeply rooted than a Habermasian model implies. As such, political affiliation is likely ingrained to the point where ideology may determine perception itself.

DISCUSSION

The dominant model of overcoming political disagreement – the Habermasian “discourse model” – hinges upon the assumption that should two individuals disagree on an issue on the basis of political affiliation, agreement can be reached if both discuss the reasons underlying the conflict. In other words, discourse is central – the nature of disagreements is primarily verbal and based on logical reasoning, which is why explications are capable of overcoming disagreement via discourse. Should this model hold, we would not expect differences in aesthetic judgment based on political positions. However, we found ideological position to be linked to specific patterns of musical appraisal; furthermore, we found that we could use individual “musical signatures” to accurately predict an individual’s ideological position more than 70% of the time. In addition, our results reveal a distinct discrepancy between self-reported music listening behavior and specific ratings of appraisal and familiarity elicited during the experiment. For most

genres, self-reported listening behavior was not correlated with familiarity or appraisal; we offer two possible explanations for this finding. First, it is possible that self-reported listening behavior is not indicative of familiarity or preference. Music plays a distinct role in today's social world—music is peripherally present across a variety of social situations ranging from elevator commutes to political rallies. In fact, it is perhaps more difficult to contrive a social setting in which music is absent (North, Hargreaves, & Hargreaves, 2004). Thus, it is possible that music consumption is involuntary to a degree. In our measure, participants were asked to report the type of music they “typically” listen to; however, this may reflect passive environmental exposure, rather than autonomous music listening. Importantly, it appears that self-reported listening behaviors may reflect ideological characteristics inherent to political affiliation. For instance, individuals that self-identified as liberal reported listening to more genres of music in total than conservative or moderate participants (*Fig. 1*), which could reflect the widespread assumption that diversity and openness are central tenets of liberalism (McCrae, 1996). Indeed, liberals consistently score more highly on personality measures of openness in comparison to conservatives (Carney, Jost, Gosling, & Porter, 2008; Jost et al., 2003; Ekehammar, Akrami, & Gylje, 2004; Van Hiel & Mervielde, 2004), which suggests that openness may be a culturally acknowledged characteristic of liberalism. Although this finding has been replicated with a high degree of consistency, such self-reported measures of openness rely on the assumption that respondents will be able to answer questions about themselves both truthfully and accurately without engaging in impression management. It is entirely possible that a similar effect underlies the discrepancies observed in our study: individuals could have engaged in impression management tactics to conform to purported group characteristics while self-reporting preferences and behavior (i.e. liberals may report more diverse music listening behavior in order

to appear consistent with their social group identity). This explanation is further supported by theories that suggest music acts as a cultural marker (Volgsten, 2014)— music is powerfully intertwined with social identity in adolescence (Gooding & Standley, 2011) and has been theorized to play a role in person perception and stereotype categorization (Zillmann & Bhatia, 1989). Thus, it is highly plausible that the self-reported music preferences observed in our study reflect group identity, rather than true personal preference.

Critically, small sample sizes and coarse ideological categorization limit the generalizability of our findings. Our sample size was affected by geographical constraints as a result of the site in which the experiment took place. Our lab is located in the midst of the New York University campus; therefore a large portion of our sample was drawn from predominantly liberal students attending the liberal university. As such, few study participants identified as conservative. To address this concern, we grouped participants according to whether they saw themselves as ‘liberal’ or ‘non-liberal’, which resulted in coarse ideological categories. Future studies might wish to refine the categories outlined in this study in order to further examine the specificity of ideological preference. However, future endeavors must employ large sample sizes for each distinct ideological group in order to determine the magnitude of such effects.

Our findings challenge a fundamental assumption underlying the Habermas model and suggest a more troubling possibility than the theory originally implies. If dissenting parties can indeed achieve consensus via unrestricted deliberation, both parties must be able to access and verbally communicate reasons underlying disagreement. However, our findings suggest ideological affiliations may be more deeply held than previously thought. What kind of discourse could convince a devotee of Kanye West’s “Gold Digger” to change their mind about the aesthetic quality of such music? Ideology may instead manifest in terms of unique appraisal

judgements that do not necessarily lend themselves to discussion and therefore cannot be altered by discourse. For instance, if two dissenting individuals are unable to describe precisely why each finds “Gold Digger” to be respectively enjoyable or aversive, verbal deliberation is unlikely to yield consensus or change the aesthetic preferences of either party. In essence, the nature of ideology cannot be contained to a verbal level.

These findings are topical in both societal and scientific terms. Scientifically, our findings challenge Habermas’s theoretical approach to conflict resolution: unrestricted deliberation is unlikely to yield consensus if the basis of ideological conflict itself cannot be verbally retrieved. Our findings also contribute to wider concerns pertaining to the nature of political disagreement in society: with sectionalism on the rise, some historians point out the potential for partisan conflicts to turn violent. If we as a society are to manage disagreement effectively going forward, we must first understand its roots and that its nature is not necessarily contained to an easily verbalized ideological position.

This study is one of the first to examine aesthetic judgments of music through the lens of political disagreement. The results from this study add to a growing body of research addressing the nature of disagreement, which is an urgent issue due to heightened levels of partisanship, rapidly increasing political divisiveness, and ideological polarization at large. Most importantly, our findings suggest that ideological beliefs are more deeply rooted than suggested by the discourse model – as such, ideology may moderate aesthetic appraisal of stimuli we encounter in everyday life, such as music.

Figures

Figure 1: Number of genres listened to and ideology

Figure 2: Self-reported listening preference and ideology

Figure 3: Musical appraisal and ideology

Figure 4: Musical familiarity and ideology

Figure 5a: Polarization analysis of individual songs

Figure 5b: Polarization analysis of individual songs

Figure 5c: Polarization analysis of individual songs

Figure 5d: Polarization analysis of individual songs

Figure 6a: Ideological classification accuracy as a function of classifier cutoff

Figure 6b: Ideological classification accuracy as a function of aesthetic preference

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