

# The Melodies of Politics: Assessing a Correlation Between Music Taste and Political Views with Spotify

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## ABSTRACT

Politics are a fundamental part of human society, and as such, studies have been done to attempt to find ways to predict one's political views, particularly for advertising purposes. In recent years, politicians and political movements have begun to employ the use of popular music or musicians to accompany their causes and advertisements. Studies have been done in the past to determine whether or not a correlation exists between politics and music, yet most have fallen short in data collection or simply did not achieve any results with correlation. This study attempts to go beyond previous studies by using more accurate data reporting with Spotify's API, which allows for data collection from a participant's entire listening history on the platform. All of the programming, survey questions, excel formulas and instructions can be found at <https://github.com/ajlacognata/researchspotifyapp> if you wish to attempt to replicate this study.

## Introduction

In the modern era, music has consumed the artistic world. More than ever, the melodies and notes created by a series of vibrations that humans call music hits the ears of our youngest generation. With the introduction of music streaming and the development of technology to the point where most Americans have a complex computer in their pocket at all times, it is impossible for music to not have some kind of impact on any given person's life. The question is, does it have any relationship with one's political taste?

## Literature Review

### Personality

Personality is a key tool used to predict behavior in people. In one study published in the journal, *Perspectives on Psychological Science*, the authors stated that there was "increasingly robust evidence that personality matters for a wide range of life outcomes" (Roberts et al., 2007). Using personality, you can predict a large array of traits in a person. In order to do this, researchers must use personality tests in order to obtain participants' personalities. The most common form of this amongst researchers in the field of music and politic correlation is the Big Five test. The Big Five test, created by Raymond B. Catell, is a massive catalogue of 18,000 terms and 171 scales in order to give researchers the most help predicting personality as possible. The "Big Five" traits themselves are split up into five sets of two traits, the test will assign a participant with five traits, one of two in each five pairs. The five pairs are Extraversion v Introversion, Agreeableness (agreeable or not agreeable), Dependability (dependable or not dependable), Emotional Stability v Neuroticism, and Openness (Goldberg, 1990). This test can be used to assess personality

and therefore be able to predict a large array of things along with it (as discussed in future paragraphs of this paper), the most important of which, to this paper, is music and politics.

#### Personality and Politics Correlation

One's political views are a fundamental aspect of the way they think, and researchers have proven this notion over time with various studies. For example, political science professor Jeff Mondak wrote that, "attention to the psychology of individual differences can help us to uncover some of the sources of variance in mass opinion about politics and governance" (Mondak et al., 2010). Mondak's paper centered around trying to discover which aspects of personality could predict certain political views, and this was demonstrated to be possible with Mondak's research. Mondak, however, is not the only purpose to have proposed this. In a more detailed paper, by psychology professors from the University of Toronto, professors Xiaowen Xu and Jordan Peterson describe how certain personality traits correlate with certain political views. Xu and Peterson describe liberalistic personality traits to encompass higher openness to experience, lower conscientiousness, youthfulness, higher education (Xu and Peterson, 2017). In a paper written by a group of psychology professors centered around personality/social cues left by people that hint towards a political view, the professors state that "conservatives score higher than liberals on measures of self-control and orderliness... [and] possess stronger personal needs for order, structure, closure, and decisiveness in comparison with liberals" (Carney et al., 2008). Lastly, a paper written by four professors from Yale and one from Brooklyn College for the American Political Science Review. This study had 14,601 participants, from across the nation, and showed very similar results to the other studies previously mentioned. This study also got more specific into separating aspects of both liberalism and conservatism into economic and social groups, furthering the specificity of the results (Gerber et al., 2010). These studies, together, show how there is a clear correlation between personality and politics, and you can predict one's political views through personality. This will become abundantly useful in establishing a correlation as the backing to the correlation between music and politics is very dependent on a correlation between personality and music, which is discussed further in the next heading of this section. However, all of these studies together are not only crucial because they help establish a baseline for this field of research, but they also provide reference appendices for how they gathered their data, something that will be beneficial in the methods section of this paper.

#### Personality and Music Correlation

Personality is an integral part to human character, and as such it is found in all aspects of one's character. Just like politics, studies have shown that there is indeed a fairly significant correlation between one's personality and music taste. In a study written by two social psychologists from the University of Texas found that there is a "clear, robust, and meaningful structure underlying music preferences" when linked to personality (Rentfrow and Gosling, 2002). These researchers also go into great detail throughout the paper to describe how certain aspects of music, such as tempo, valence, and genre, correlate with certain personality attributes. This detail furthers the field in providing evidence that not only does music as a whole correlate with personality, but individualistic music attributes also independently correlate with personality traits (Rentfrow and Gosling, 2002). This is incredibly important to this study as this study intends to assess a possible correlation between individual music attributes, within the music taste of a participant, and political views. Furthermore, another study done by two psychology professors from the University of Calgary found that "[music] is a 'window' into their world. Such music preferences reflect the values, attitudes, and the feelings they experience" (Schwartz and Fouts, 2002). In contrast, a study done by 3 researchers from the Netherlands found weak correlations between music and personality, further claiming that other surveys do not display correlations that are strong enough, directly citing Rentfrow & Gosling. The researchers go into further detail explaining that a possibility for this discrepancy may be due to ambiguity between genres and the general meshing of music in the modern day, in comparison to some older studies. They also recommend future studies that analyze more specific aspects of music such as some of what Rentfrow and Gosling looked at in their study, however with a higher accuracy as theirs was based off general aspects of self-reported genres (Dunn, Ruyter, and Bouwhuis, 2011). This study looks to solve this problem by analyzing direct music data, from specific songs that individuals like. By using Spotify's personalization data, data can be more specified to the individual rather than generalized traits of large, mostly ambiguous, genres.

## Music and Politics Correlation

One would believe that due to the supposed correlation between politics & personality and personality & politics, that there would be a clear supposed correlation between politics and music found in research already, however not a whole lot of research has been done in this field, and on top of this the research that has, has not found any correlation strong enough to confidently say that there is a correlation between music and politics. One study in particular done by a UCF student that was put into their Showcase of Text, Archives, Research, and Scholarship showcase repository attempted to find a correlation between music and politics and could not find sufficient evidence, however they cited their reliance on self-reporting to be a key limitation in the study as with other studies previously mentioned. They also mentioned the issue of genre blurring in mainstream music (Stringer, 2017). There is a clear trend amongst these studies: they all relied on self-reporting to collect their data on the music side of things. This study will reassess the possible correlation between both music and politics and music and personality in order to assess if the reliance on personalized data taken over a period of regular listening by a participant shows a correlation personality and politics unlike prior studies that relied on self-reporting.

### Similar Studies

There have been no studies that have relied on something other than self-reporting in the music section other than some minor genre analysis surveys done by advertising companies, however there are studies that are similar in the methods this research paper will use to obtain data on one's personality and one's political views. Omari Stringer's thesis, which is also based on assessing a correlation between music and politics, used two key tests in order to obtain this data. The Big Five test that was mentioned previously on this paper, and the use of the Kerlinger scale, a scale used to measure liberal v conservative political views (Stringer, 2017). Adjustments will be made to the Kerlinger scale test used to allow for economic v social aspects to also be accounted for, using a paper written by Paul H. Ray, who has a Ph.D. in sociology. His paper, "The New Political Compass" has a large array of questions that can be used to gauge political views and it will be used to assess economic and social views (discussed later in the Methods section) (Ray, 2002). Stringer's thesis also uses linear regression in order to compare the data to assess correlation, a method that will also be further discussed later in the paper (Stringer, 2017).

### Goal

The main purpose of this study is to answer the following question: Do Aspects of Music Listening Habits in High Schoolers Correlate with their Political Orientation? Based off of studies that currently exist, and given the method that will be used, I do believe that a correlation may exist.

### Gap

The two gaps in this study include the analysis of teenagers and the use of Spotify data rather than self-reported genre answers. Because of the inclusion of Spotify data, not only will genres be determined by one's listening history, this study can also analysis other attributes of the music participants listen to, such as tempo, valence, and energy.

## Methods

### Types

This study used mixed-methodologies which consist of survey research, ex post facto research, and correlational research. A survey makes the most sense to obtain the Big Five and political orientation tests as these are the methods that have been tried and true. For the music, by using Spotify data that exists, I employed ex post facto research to

analyze the data Spotify already has. Correlational research uses the statistical tests such as ANOVA and R-values to analyze possible correlations.

## Design

A survey research method was used for this project as it allowed for the collection of self-reported, anonymous data from participants, which was very important given the desire for anonymity considering this project is centered around one's political orientation, personality, and music taste. The survey consisted of four parts. The first part contained the Spotify API login (part of the ex post facto method but shared through the survey). Essentially, a participant accesses the main survey website, hosted through a webhost such as DreamHost, which contains the consent form which explains the procedures of the survey, in order for the participant to understand how to complete it, as well as the anonymity of the data collected. The website also contains a login button to provide a user's top 50 songs and artists as determined by Spotify. By utilizing Spotify's web API, this data was collected through a custom-written NodeJS application that collects only that data by obtaining a sign-in key from the user (provided when they securely login through Spotify) and passing it to Spotify's servers to request two documents, in .JSON format, to a database that only the researcher has access to<sup>1</sup>. This login process, as stated, is handled securely through Spotify's own servers, meaning all password handling is handled only by Spotify, and not by the researcher. This helps satisfy privacy/anonymity worries. Spotify was utilized in this survey for a few key reasons. All studies done on the possible correlation between music taste and political orientation have been reliant on self-reporting for music taste, limiting specificity and accuracy in responses. By utilizing Spotify, results are more precise, allowing for a more complex analysis. This means that the data analysis can look not only at broader genres, but also other aspects of music such as tempo and other key attributes that make up songs. This also means that the data already exists, and the study will be analyzing existing data, making it ex post facto. After logging into their Spotify, participants are redirected to a webpage that contains a number and a link to a Microsoft Forms survey. The participants are asked to remember that number and input it when prompted in the survey. The second part of the survey is the first segment of the Microsoft Forms and contains demographic questions as well as a request for the number given on the prior page. This section's questions contain "Other/Prefer not to say" options if the participant wishes not to share that information. The third section contains statements that the participants must rank on a 5-point Likert scale from "very inaccurate" to "very accurate" on how well they describe themselves. These questions are taken from Goldberg's Big 5 Test, with 5/10 statements being taken from each of the five sections in order to shorten the test a bit to ensure participation. The fourth, and final, section of the survey is the political questionnaire. There are 25 statements that participants rank on a 5-point Likert scale on how much they agree with them from "Strongly Disagree" to "Strongly Agree".

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<sup>1</sup> All of the programming, survey questions, excel formulas and instructions can be found at <https://github.com/ajlancognata/researchspotifyapp> if you wish to attempt to replicate this study.

A	Very Inaccurate	Moderately Inaccurate	Neither Inaccurate Nor Accurate	Moderately Accurate	Very Accurate
I feel little concern for others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
America needs a health insurance plan that covers everyone, rich or poor, for all illnesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Figure 1.** Examples of question formatting. Figure 1A shows an example of a Big 5 Test question and Figure 1B shows an example of a political questionnaire question.

#### Participants

All participants in this study are high school students, in the 2020-2021 school year, in Central Florida who have a Spotify account. These scopes were chosen for a few reasons including the varying political/music taste between generations, access to the population, and the ability to satisfy the requirements of the research question. By restricting it to primarily just Central Florida, this helps lessen any variability in music taste found across the country, or the world, as music taste can vary widely depending on location. By restricting it to just high schoolers, this study is able to address both the issue of varying music taste across generations as well as surveying a population untouched in previous studies in this field.

#### Procedure

The survey was uploaded to various social media sites in order to get the survey out to participants. The opening page of the survey contains a consent form that explains how to complete the survey, participation requirements, and the information collected. The anonymous nature of the survey was explicitly stated to ensure that the participant is aware that nothing could be traced back to them to prevent any response bias. Upon logging into their Spotify in section one, their top data is stored in a database with a number that will be linked to their questionnaire data once that is electronically returned through Microsoft Forms at the end of section four.

#### Data Analysis

Once the survey portion of the project was concluded and all participants' responses recorded, data from Microsoft Forms and Spotify's top artist/track data were exported to an Excel spreadsheet to help organize the data and to complete the correlational research part of my method. There were initial calculations for each participant in relation to their personality as determined by the Big Five Test in section three as well as their political orientation as determined by the political questionnaire in section four. In Excel, a formula<sup>1</sup> was set up to take the answer choice of every question, for the political questionnaire, for each participant and place it on a scale from -2 to 2, with -2 or 2 being a 'Strongly' choice, with the sign of the number being dependent on which side of the answer, agree or disagree, would move them left on the spectrum, negative, or right on the spectrum, positive. American politics can be extremely divisive on particular issues, therefore to account for this, a few key questions were chosen to be from -4 to 4 rather

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than -2 to 2, with what would previously be a  $\pm 1$  becoming  $\pm 2$ <sup>1</sup>. This was done to ensure that the most important policies of each side of the spectrum would have a larger impact on one's score rather than being equal to the more moderate debates. These questions were chosen based off of studies done on important polarizing topics in American politics (Pew Research Center, 2020). This would then be compared to the personality test, the top genre, and the average musical attributes for each participant. The average music attributes were simply summed up and divided by 50 (number of tracks). The top genre of each participant was chosen based off of their top 50 artists. Spotify has about 5000 genres in their catalog, so to slim it down, I made a program to take each artist's top genre and convert it to a simpler more generic genre based off of a list I created<sup>1</sup>. Each participant's top genre was just the genre with a plurality out of the 50. Two statistical tests had to be used in order to complete the calculations due to a mix of qualitative and quantitative data. For the quantitative data (musical attributes and personality scores), an R-value was obtained using a scatterplot on Excel. R-values are used to show the correlation between two quantitative values. An r of 0 represents no correlation while an r of 1 shows a perfect linear correlation. R-values of .3, .5, or .7 are weak, moderate, or strong respectfully. The strength of correlation is dependent on the closest value. For associations between quantitative and qualitative values (personality types and genres), an Analysis of Variance (ANOVA) test was used. After completing an ANOVA test, a p-value is output. This p-value will determine whether or not there is a difference in means between qualitative categories. If the p-value is above 0.05 then there is no difference between the means of each category, meaning there is no way to predict a quantitative value with a qualitative trait. If the p-value is below 0.05, however, a qualitative trait can predict a quantitative value.

#### Results/Analysis

The survey yielded a total of 66 responses. Of these 66 responses, all tested on the liberal side of the political spectrum, although 5 respondents selected 'Republican' when asked what party they associate with (Figure 2). This would indicate a very large issue with the sample in terms of representation, as in the last election, the Central Florida Area surveyed voted 50.4% Republican. Although this is in the adult population, which means that the numbers will likely be lower amongst teens, studies show that upbringing has a large impact on a teenager's political views, therefore it would be odd for no teens to test conservative on the scale. Figure 3 displays basic demographic questions to help determine whether the sample group represents the population demographically. The sample represents the gender ratio in the population well, however there is an overrepresentation of Asians and an underrepresentation of Caucasians and African Americans as a consequence.

### What political party do you associate yourself with?

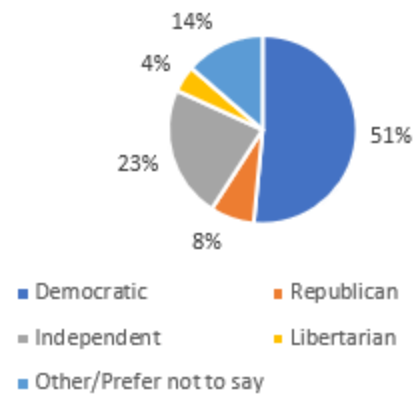


Figure 2. Responses when asked what party respondents affiliated with.

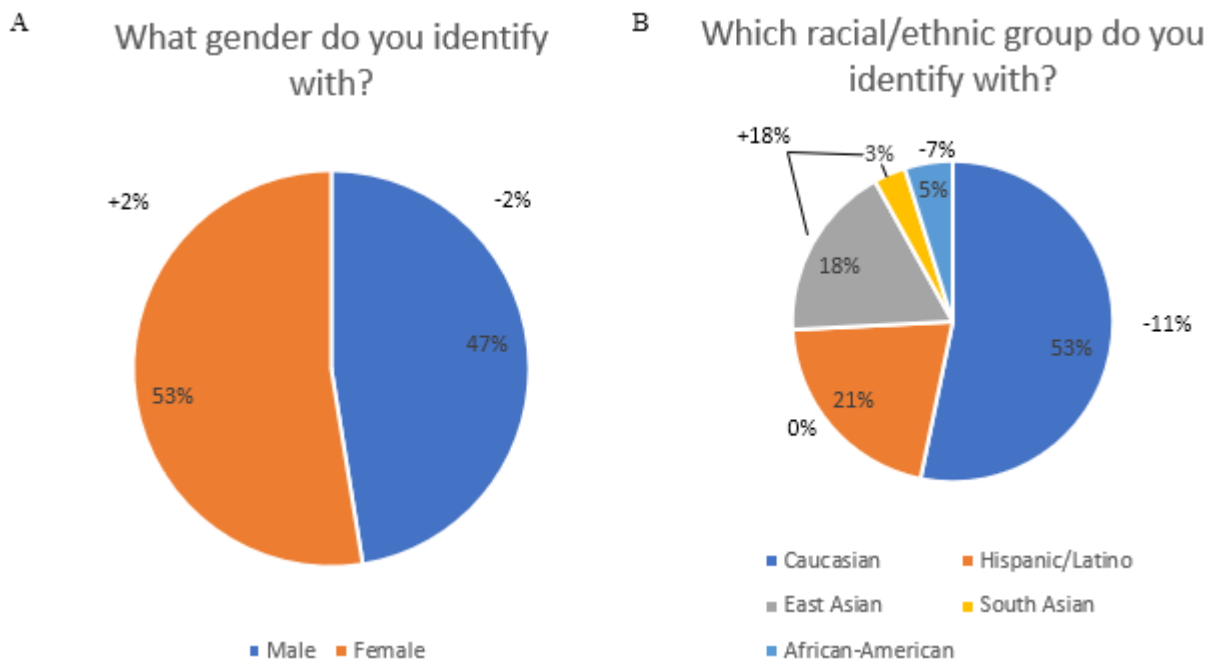


Figure 3. Demographic responses with labels to show difference from region population. Figure 3A shows gender identity and Figure 3B shows racial/ethnic identity. Figures exclude those who responded with “Prefer not to Say”. As described in the methodology section, an Analysis of Variance (ANOVA) test was completed to assess whether the mean political orientation score for the given categories, in this case genres and the Big Five personality groups, are the same. An ANOVA test on the genres and political orientation scores resulted in a p-value = 0.113, which, at a significance variable of 0.05, fails to reject the null hypothesis that all the means are equal (Figure 4). The ANOVA test completed on Big Five categories and the political orientation score resulted in a p-value of about 0. At a significance level of 0.05 gives us evidence to reject the null hypothesis and suggest, with confidence, that certain personality categories can be used to predict political orientation (Figure 5).

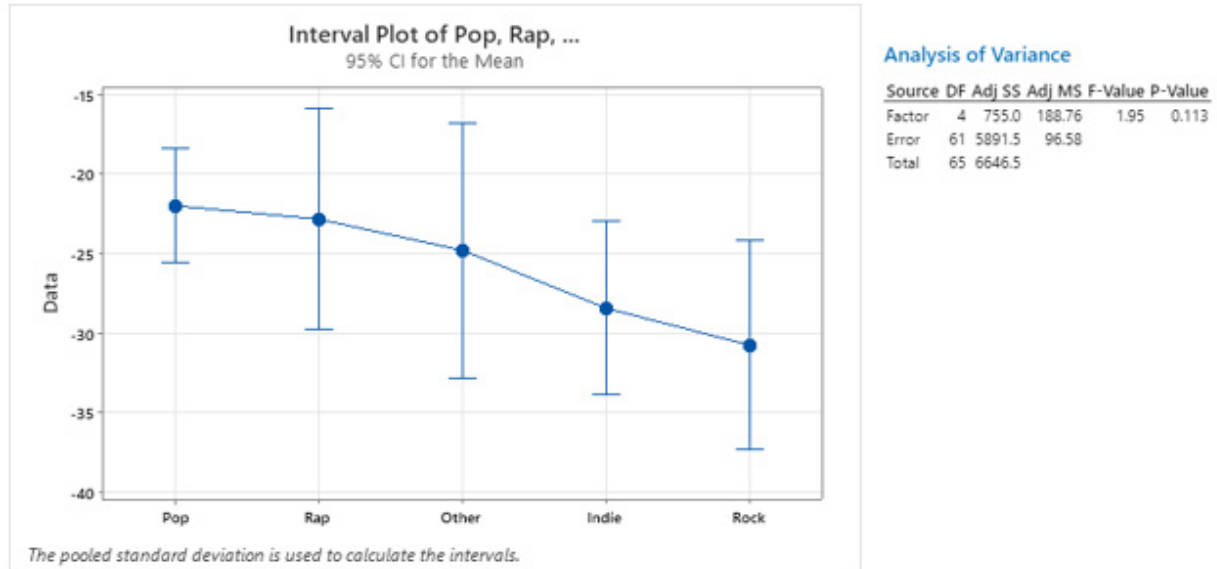


Figure 4. ANOVA results between genre categories and political orientation scores.

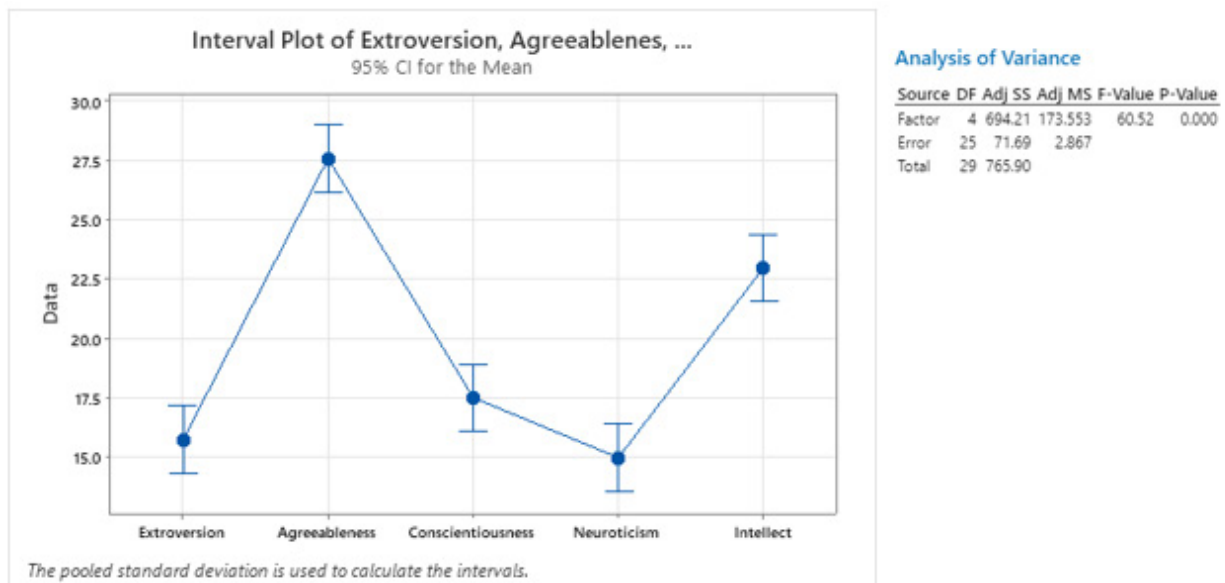


Figure 5. ANOVA results between the Big Five categories and Political Orientation

R-values were also used to assess potential correlations, with r being used to compare political orientation with either an average musical attribute or personality trait. All r values captured in this study resulted in a value well below what is considered to be even a weak correlation ( $\pm 3$ ) (Tables 1-2).



**Table 1.** r-values when comparing musical attributes with political orientation (Speech. = Speechiness, Acoustic = Acousticness, Instrumental = Instrumentalness, and Live = Liveness).

	<i>Danceability</i>	<i>Energy</i>	<i>Loudness</i>	<i>Speech.</i>	<i>Acoustic.</i>	<i>Instrumental.</i>	<i>Live.</i>	<i>Valence</i>	<i>Tempo</i>
<i>r</i>	0.186	0.142	0.26	0.097	-0.092	-0.217	-0.044	0.047	.01011

**Table 2.** r-values when comparing personality traits with political orientation.

	<i>Extro- version</i>	<i>Agreea- bleness</i>	<i>Conscien- tiousness</i>	<i>Neuroti- cism</i>	<i>Intel- lect</i>	<i>Extro- version</i>
<i>r</i>	-0.02	-0.281	0.161	0.146	-0.13	-0.02

Overall, the only association/correlation discovered was that between certain personality traits and political orientation. This correlation does match prior studies, however the more intriguing outcome is that of a lack of correlation where correlation has been found in prior studies, such as the lack of a correlation between music genre and personality. The nonexistence of any music-personality correlation could be an outcome of two possibilities: teenagers do not match up with studies of adults or possibly my study’s method of obtaining genres is more accurate and accurately suggests that there is not truly a correlation. Music consumption in the modern era is vastly different from what it used to be. Previous generations had to either listen to music on the radio, which was tailored to match the demographics of the area in order to make money, or they had to purchase their music. People can discover music they would never have been exposed to in previous eras of music conception (Doeland, 2017) . The introduction of streaming simply changed music consumption so drastically that it could have possibly completely removed a previously existing correlation due to a change in music discovery.

Another key goal of this study was to integrate the analysis of specific music attributes of participants’ music listening habits to assess a possible correlation. This study proved to fail to find a correlation between all of the analyzed musical attributes and political orientation. The study also did not find a correlation between music genre and political orientation either, therefore I believe it is important to continue to analyze these variables with a broader and more diverse sample size for a possible connection in future studies.

## Conclusion

### Limitations

The largest limitation of this survey is who the respondents were. With 0 respondents testing on the right side of the political spectrum, it is simply impossible to truly apply this study to the population. Both Central Florida and the United States as a whole have a population that is split roughly down the middle politically, generally with a lean towards liberalism. This study is based only on those who tested liberal. It is extremely plausible that the lack of certain correlations could be due to a lack of those with severely differing political views.

Surveys also simply carry an inherent flaw with them. While I attempted to bypass the music response bias with the Spotify data, this does not account for the extremely sensitive topic of politics. Some people simply do not respond to certain questions accurately, even in anonymity, if they feel it is not the answer that the researcher “wants”, especially political ones in the particularly polarized state this nation currently lies in. This could possibly explain the lack of conservative respondents in this study.

While I, as well as many researchers in my field before me, believe that the use of Spotify data rather than a written response is more accurate to one’s musical taste, there can be inaccuracies that have been unexplored with the data. Some listen to music through various means, such as the radio or other streaming services, on top of Spotify and

their data may not fully represent them. Not only this but many do not use Spotify, and instead opt for a different streaming service, further limiting the population. It cannot truly be known how accurate using the Spotify data versus using written responses is until a study is done on it, which as of right now does not exist.

Teenagers can also be very blind to the political climate, some not truly understanding the implications of certain questions being asked, with only 10% of 18-24 year old voters in the 2012 election meeting any standard of informed political engagement (Harvard Kennedy School, 2013). With a severe lack of political awareness amongst teens, some may have simply just not understood certain questions at hand or what the effects of policies they support may have, which may inaccurately reflect their true political beliefs.

#### Implications

The results of this survey imply that there is no reason in attempting to use music as a politician to attempt to grab the attention of your possible teenage constituents. If there truly is no correlation between music and politics, then political advertisements and campaigns should continue to stick to what they know works: orchestral music that elicits a particular emotion that matches the message or popular music with a political message attached to it such as 'Fortunate Son' by Creedence Clearwater Revival. That method is tried and true and while some politicians have begun to use popular music in their advertisements and campaigns, this study shows that there is no reason to risk the possible lawsuits a politician may face for using an artist's music, such as those faced by Donald Trump in the 2016 election cycle. Furthermore, studies show that one's partisan loyalty, or the measure of partisanship in one person, is established by the time they are 18 (Hopkins, 2014). Because this study displays a lack of a connection between music taste a political orientation, attempting to capture the attention of teens as their partisan loyalty is establishing would be simply useless.

## Future Studies

In order to expand the field, it is important that we perform a study that can capture a sample that truly represents its population and contains a wider spectrum of views to test my original hypothesis in the state it was intended to be tested. If future studies do, however, continue to find a lack of correlation, there are two paths to go down that I believe would be the most beneficial to the field. If a lack of correlation is only found within the teenage population, a new question should be asked: Do younger generations not experience the same correlations as older generations found in prior studies due to a change in music conception following the adoption of music streaming/upbringing without the internet? By exploring this question, we not only prepare for the future in politics and music, particularly in the political ad/campaign sector, we can add to the growing list of outcomes brought by the adoption of the internet into daily life. If a correlation is found amongst multiple groups, then I propose that future studies also collect data the old-fashioned way of self-reported responses along with my Spotify technique for music data collection. By both manually and automatically collecting data, we can compare the outcomes of statistical analyses on both and determine if prior studies were false due to response bias.

While my study did not yield results that show a correlation, if future studies were to expand on knowledge in the field and it became clearer that a correlation does truly exist, this knowledge could be applied to the political advertising and campaigning fields. Although in most circumstances, mostly in advertising, music is generally written to convey a certain emotion, usually performed by an orchestra or band, there are circumstances in which popular music has been used. In political advertising this can be seen in Bernie Sanders' 2016 'America' advert, where he uses a Simon and Garfunkel track. While it does appear in advertisements, popular music is much more abundant on the campaign trail. Researchers speculate, but have not proven, that the particular music used is fitted for a certain demographic, with Donald Trump employing the use of music by Bruce Springsteen and Tom Petty, while Hillary Clinton used music from the likes of Katy Perry and Sara Bareilles. This feature of American politics has been here for a few decades, and it does not show any sign of stopping (Royal, 2016). While there is only speculation surrounding the correlation of the music chosen and the candidate's target demographic, future studies could explore this topic

through content analysis and a survey, using my music collection method, of voters in the upcoming election to explore whether or not they can predict a certain voter's preferred candidate via their choice in music.

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