

Do self-expression values affect global jazz popularity? An analysis of postmaterialism and political activity

Ahan Iyer¹, Rajesh V. Iyer²

¹ Holmdel High School, Holmdel, New Jersey

² Department of Radiation Oncology, Community Medical Center/RWJ Barnabas Health, Toms River, New Jersey

SUMMARY

Jazz music is known for its unique rhythms and spontaneous incorporation of improvisation, historically stemming from a need for self-expression. Jazz is an American art form and is not as popular globally. This study explores whether the spread of jazz around the world may be related to the self-expression values of a particular country. Postmaterialism is an ideology that values self-expression and quality of life over physical and economic stability. Jazz popularity was defined as the percentage of global jazz music that a country produces relative to all other countries. We hypothesized that countries with higher postmaterialist values would have higher jazz popularity and that countries with citizens with higher engagement with politics would also have higher jazz popularity. We conducted regression analyses on the Joint European Values Study and World Values Survey as well as data from the streaming services MusicBrainz and Last.Fm. We conducted analyses to correlate the popularity of jazz in 63 countries with the postmaterialism index and three variables representing political activity, as measured by level of interest in politics, importance of politics in life, and popularity of signing petitions. Overall, the results indicate a strong correlation between high postmaterialist values and jazz popularity in countries around the world. A correlation was also identified between the degree of active political activity and jazz popularity in a country. Jazz artists and fans may find it easier to promote this American art form in countries that exhibit a high degree of postmaterialism and political activity as a result.

INTRODUCTION

The music genre of jazz has had a very rich 150-year long history. Jazz evolved from multiple musical styles including the blues, a music genre sung and performed by African American slaves to cope with the harsh treatment they endured (1). The blues developed into jazz in the late 1800s in the city of New Orleans after the American Civil War and quickly grew in popularity over the turn of the century becoming the primary American music genre of the period (1). Jazz initially spread around the world in the 1920s through trade to global economic hubs and commercial centers, resulting in the records, sheet music, and instruments finding their way to foreign markets (2). There were many jazz artists

who performed internationally in the 1930's and 1940's, including Buck Clayton, Teddy Weatherford, and Rudy Jackson (2). Jazz would continue to flourish in the late 1950s at the height of the Cold War, when President Dwight D. Eisenhower initiated a program that sent prominent American jazz musicians across the globe to spread their music and culture. Aiming to dissuade negative American stereotypes spread by the Soviet Union, these "Jazz Ambassadors" would be the catalyst for a global recognition of the genre (3). Seventy years later, jazz has maintained its popularity in the United States and in a variety of other countries around the world.

Just as jazz is a music form that embodies self-expression, postmaterialism is a set of values which promotes the freedom of expression over economic security (4). Due to this common characteristic of self-expression in both jazz and postmaterialism, we evaluated a possible correlation between jazz popularity and postmaterialism in various countries. We hypothesized that because of jazz's connections with freedom of expression, jazz popularity in each country may be closely correlated with that country's degree of postmaterialist views.

Democratic countries have a higher degree of postmaterialism than other forms of political ideology (5). Countries with higher postmaterialist views have a higher degree of political activism and participation (6). Because of this relationship between postmaterialism and political activity, we also analyzed the possible association between jazz popularity and political activity and hypothesized that a country's jazz popularity is related to its degree of political participation. We found that countries with a higher degree of postmaterialism had higher jazz popularity, independent of socioeconomic status. We also found that countries with a higher degree of political participation were also had higher jazz popularity. These findings suggest that jazz artists and audiences who want to promote jazz popularity may find more appreciation in societies that have high degrees of self-expression as exhibited by postmaterialism and political activity.

RESULTS

We used data from MusicBrainz, derived from the music streaming service Last.Fm, to measure the popularity of jazz in countries around the world (7). We used the European Values Study and World Values Survey (Joint EVS/WVS) to evaluate the degree of postmaterialism of each country (8). We tested the hypothesis that countries with a high postmaterialism index would show higher jazz popularity by examining the relationship between the square root of the percentage of jazz production and the postmaterialism index. We found a positive correlation between jazz production and postmaterialism index (**Figure 1**). While the majority of

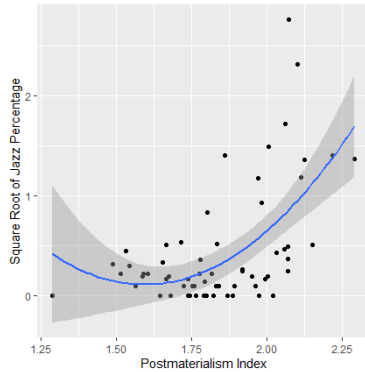


Figure 1. Percentage of jazz popularity based on postmaterialism index. Scatter plot and line of best fit comparing the Joint EVS/WVS postmaterialism index against the square root of the percentage of jazz music produced by each country, Regression $R^2 = 0.3535$, $p < 0.001$.

countries assessed produced little to no jazz, a few countries produced a very high percentage, leading to a quadratic relationship between jazz production and postmaterialism index.

We observed a correlation between the postmaterialism index and the square root of jazz popularity, using ordinary least squares (OLS) regression to evaluate a quadratic relationship (Table 1). Notably, the regression indicated an R^2 value of 0.354, meaning the model postmaterialism index could explain approximately 35% of the variability in jazz popularity scores by country. Also, the p-value was less than 0.001, indicating a statistically significant relationship between these variables and providing support for the hypothesis.

We then tested our hypothesis that countries with a high postmaterialism index would still show higher jazz popularity when controlling for socioeconomic status, as measured by subjective household income. This was evaluated using (OLS) regression to assess the quadratic relationship between the postmaterialism index and the square root of jazz popularity. The regression indicated an R^2 value of 0.357 ($p < 0.001$) with a regression coefficient of -0.074 (Table 2). These results are similar to those obtained without controlling for socioeconomic

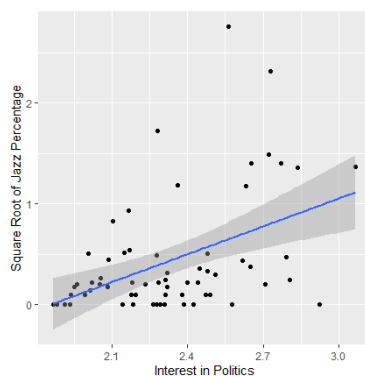


Figure 2. Percentage of jazz popularity based on interest in politics. Scatter plot and line of best fit comparing the average level of interest in politics of a country against the square root of the percentage of jazz music produced by each country, Regression $R^2 = 0.202$, $p < 0.001$.

| Analyzed Variable | Regression Coefficient | Standard Error | p-value | R ² |
|---------------------------------|------------------------|----------------|---------|----------------|
| Intercept | 8.375 | 0.321 | | |
| Postmaterialism Index (Squared) | 3.251 | 1.157 | < .001 | 0.3535 |

Table 1. Statistically significant correlation between postmaterialism index and jazz popularity by country. A regression model showing the statistical correlation between the Joint European Values Study/World Values Survey postmaterialism index and the square root of the percentage of jazz music produced by each country.

status, indicating that socioeconomic status did not affect the correlation between jazz popularity and the postmaterialism index (Table 1, Table 2).

We investigated our hypothesis that countries with higher political activity would have higher jazz popularity by examining the relationship of three political-related variables and jazz popularity. There was a positive correlation between jazz production and the average level of interest in politics (Figure 2). This model was fit by a linear regression. Similar to our previous comparison between postmaterialism and jazz popularity, there remained a cluster of points at the bottom of the graph. We also identified a few outliers such as the United Kingdom, France, and Canada, which were the countries with the highest production of jazz in the dataset.

We found a positive correlation between jazz production and countries with a higher importance of politics in life (Figure 3). This model was fit by a linear regression. Some of the same outliers at one end of the graph were again noted including the United Kingdom, France, and Canada and now also include the Philippines and Nigeria, with both countries having an abnormally high average importance of politics compared to their jazz popularity.

We identified another positive correlation between jazz production and countries with a higher popularity of signing petitions (Figure 4). This model was fit by a quadratic regression. As in the previous analysis, many data points were clustered towards the bottom of the graph due to the

| Analyzed Variable | Regression Coefficient | Standard Error | p-value | R ² |
|--|------------------------|----------------|---------|----------------|
| Intercept | 9.199 | 4.082 | | |
| Postmaterialism Index (Squared) Controlling for Socioeconomic Status | 3.449 | 1.208 | < .001 | 0.357 |
| Socioeconomic Status | -0.074 | 0.357 | | |

Table 2. Statistically significant correlation between postmaterialism index and jazz popularity by country, while controlling for socioeconomic status. A regression model showing the statistical correlation between the Joint European Values Study/World Values Survey postmaterialism index and the square root of the percentage of jazz music produced by each country when controlled for socioeconomic status as determined by subjective household income.

| Political Variables | Regression Coefficient | Standard Error | p-value | R ² |
|---|------------------------|----------------|---------|----------------|
| Intercept | -1.711 | 0.552 | | |
| Average Interest in Politics | 0.921 | 0.235 | < .001 | 0.202 |
| Intercept | -1.732 | 0.589 | | |
| Average Importance of Politics in Life | 0.926 | 0.249 | < .001 | 0.184 |
| Intercept | 1.382 | 1.254 | | |
| Popularity of Signing Petitions (Squared) | 0.663 | 0.320 | < .001 | 0.448 |

Table 3. Statistically significant correlation between the three political variables and jazz popularity by country. A regression model showing the statistical correlation between the average level of interest in politics of a country and the square root of the percentage of jazz music produced by that country, the statistical correlation between the average level of importance politics has in the lives of citizens of a country and the square root of the percentage of jazz music produced by that country, and the statistical correlation between the popularity of signing petitions in a country on a scale from one to three and the square root of the percentage of jazz music produced by that country.

abundance of countries with low jazz production. A difference in this analysis was that countries like New Zealand, Switzerland, Australia, Iceland, and Croatia were outliers clustered in the bottom right corner because of their high popularity in signing petitions but having low jazz production.

We analyzed the level of political activity in a given country using three variables (Table 3). First, we examined the correlation between interest in politics and jazz popularity. We used OLS regression to assess the linear relationship between interest in politics and the square root of jazz popularity. The regression produced an R² value of 0.202 (p<0.001) and a regression coefficient of 0.921. Next, we investigated the correlation between the average level of importance that politics has in citizens' lives and jazz popularity. Again, we employed OLS regression to evaluate the linear relationship between the importance of politics in citizens' lives and the square root of jazz popularity. This regression yielded an R² value of 0.184 (p<0.001) with a regression coefficient of 0.926. Finally, we explored the correlation between the popularity of signing petitions and jazz popularity using an OLS regression model. We assessed a quadratic relationship between the popularity of signing petitions and jazz popularity. This regression indicated an R² value of 0.448 (p<0.001) with a regression coefficient of 0.663. This suggests that the popularity of signing petitions is more strongly correlated with jazz popularity than either of the other political variables studied, demonstrating the highest correlation between jazz popularity and any of the variables tested.

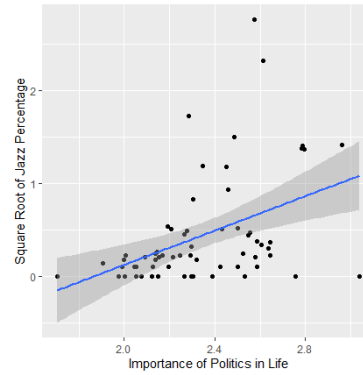


Figure 3. Percentage of jazz popularity based on importance of politics in life. Scatter plot and line of best fit comparing the average level of importance politics has in the lives of citizens of a country against the square root of the percentage of jazz music produced by each country, Regression R² = 0.184, p<0.001.

DISCUSSION

The primary hypothesis of this study was that countries with higher self-expression values would have higher rates of adopting jazz. We tested this hypothesis by examining the association between the postmaterialism index, three other political variables, and the popularity of jazz in each country. Socioeconomic status was included as a control to determine whether the correlation between the percentage of jazz produced and the postmaterialist values was dependent on a country's socioeconomic status. Our analysis found that countries with a higher degree of postmaterialism had higher jazz popularity, independent of socioeconomic status. We also found that countries with a higher degree of political participation were associated with higher jazz popularity.

Our analysis of the Joint EVS/WVS postmaterialism index and the percentage of jazz music produced by each country found a quadratic relationship with a strong correlation between the two variables. This quadratic pattern can be explained by the large disparity between the countries which produce the highest volume of jazz music compared to the ones which produce the least. In addition, the data of jazz popularity was

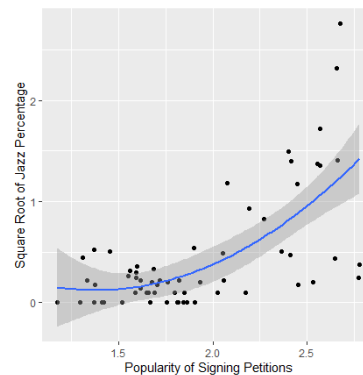


Figure 4. Percentage of jazz popularity based on popularity of signing petitions. Scatter plot and line of best fit comparing the popularity of signing petitions in a country on a scale of 1-3 against the square root of the percentage of jazz music produced by each country, Regression R² = 0.448, p<0.001.

not evenly distributed amongst the many countries which have a lower percentage of jazz music production. For example, only 10 of the 63 countries in this dataset export above 1% of the total jazz music produced on the streaming services analyzed. While this is to be expected due to the fact that the United States produces a large majority of the jazz music worldwide (>65%), this demonstrates that jazz production is still mostly confined to a select few countries from a global perspective. However, even the small difference in the data holds significance when taking into account the magnitude of this dataset and how it covers the genre comprehensively on the streaming services compiled, with thousands of artists listed. Even a few jazz popularity percentage points difference could show a difference of hundreds of artists.

Another point of interest was the relationship between the United States and postmaterialism. The United States has a high postmaterialism index, and is also jazz's country of origin. Therefore, the high correlation between postmaterialism and jazz identified in this study could be due to a primary relationship between postmaterialism and jazz, or alternatively it could be that the countries with a high cultural similarity to the United States also have high jazz popularity. The latter relationship was also observed in a study comparing the popularity of K-Pop in different countries around the world, which found that K-pop was more popular in countries with a similar culture to Korea, K-pop's country of origin (9).

We also examined the interaction between jazz popularity and the postmaterialism index of a country while controlling for socioeconomic status. The value set of postmaterialism has both economic and social components (10). This study compares jazz popularity to the self-expression values of a country, the social aspect of postmaterialism. As a result, in our analysis, we controlled the postmaterialism index for socioeconomic status. Our analysis found that the postmaterialism index's correlation remained unchanged when controlling for socioeconomic status, showing that socioeconomic status does not have an effect on jazz popularity despite its association with postmaterialism. This may be because jazz is freely available on the internet or radio stations, so access is not limited by socioeconomic status.

Another hypothesis we tested was that the degree of political activity in a country may represent the degree of self-expression and also influence jazz popularity along with postmaterialism. The degree of political activity was examined via three political variables, average interest in politics, average importance of politics in life, and popularity of signing petitions. Politics and postmaterialism have been shown to be deeply connected, with areas with higher levels of postmaterialism having a greater interest in politics alongside higher political participation as demonstrated by higher voter turnout (11). Postmaterialist values lead to political consumerism, a form of political activity (6).

Of the three political variables examined in this study, we found the variable that correlated most strongly with jazz popularity was popularity of signing petitions. The reason popularity of signing petitions correlated most strongly could be because this method of political activity is becoming more popular due to a change in the way the political activity is expressed. While traditional means of political activity like voting are declining, elite-challenging means of political

activity like boycotts, protests, and petitions are becoming increasingly popular (10). This finding may demonstrate that countries which value jazz also value more direct forms of political activity, as represented by the popularity of signing petitions.

While the data from both the Kaggle music dataset and the EVS/WVS covered a wide range of countries, one potential limitation of these datasets was that there was not as much data on the popularity of jazz in non-European countries (7, 8). Future investigations can try to quantify and analyze jazz popularity in these non-European countries. Another limitation of this study is that it only examined the production of jazz in various countries, as opposed to the consumption of jazz in those countries. The production and consumption of jazz may not closely follow each other in all countries, and so jazz consumption could be evaluated in future studies. Other variables not evaluated in this study that could affect jazz popularity include listener ethnicity, religious background, or strength of their native musical traditions.

Overall, this study gives a unique insight into the field of cultural diffusion of music genres. Our findings can lead to further avenues of research, such as examining whether cultural similarity to the United States or higher postmaterialistic values has a greater effect on whether a country will adopt jazz. Another area of further research could be comparing jazz to classical music, a music genre often seen as a juxtaposition to jazz. Finally, jazz popularity could be examined as it changes over various time periods, seeing whether the changes in jazz popularity over time continues to reflect the correlations found within this research paper. Jazz's popularity may be able to be increased in countries with higher political and economic ideology like postmaterialism.

MATERIALS AND METHODS

Data from the music streaming services MusicBrainz and Last.Fm was used to show the popularity of jazz in countries around the world and covered the many sub-genres of jazz on the platform under one comprehensive label. This data along with the European Values Study and World Values Survey (Joint EVS/WVS) was used to show how materialist or postmaterialist each country is. Further data from the Joint EVS/WVS demonstrated the interest citizens of a country have towards politics and their level of political participation, with this data being used to evaluate the correlations found between postmaterialism and jazz popularity.

To perform the data analysis, data was gathered and compared from the European Values Study and World Values Survey (Joint EVS/WVS) using the coding language R (12). The data from the Joint EVS/WVS spanned from 2017–2021, comprising the fifth wave of the EVS and the seventh wave of the WVS. The first variable used was the Postmaterialism Index (Y002) which was assessed on a 1–3 scale, with 1 representing the participant evaluating themselves as materialist, 2 representing the participant having mixed views between materialism and postmaterialism, and 3 representing the participant evaluating themselves as postmaterialist. The second variable used was the average subjective assessment of relative household income (X047_WVS7 and X047E_EVS5) which was assessed on a 1–10 scale, with 1 representing that the participant was in the lowest income group in their area and 10 representing they were part of highest income group. The third variable used was the

average interest in politics (E023) which was measured on a scale of 1–4, with 1 representing the participant thinking that politics was not at all interesting and 4 representing that they thought politics was very interesting. The fourth variable used was the average subjective assessment of the importance politics holds in one's life (A004) which was assessed on a scale of 1–4, with 1 representing the participant thinking that politics was not at all important in their life and 4 representing the participant thinking it was very important. The fifth variable used was the average popularity of signing petitions (E025) which was measured on a scale of 1–3, with 1 representing that the participant would never sign a petition, 2 representing that the participant might sign a petition in the future, and 3 representing that the participant has signed a petition in the past.

The Joint EVS/WVS was then analyzed and compared with a music streaming database including data from MusicBrainz and Last.Fm. This data was based on Piotr Patrzyk's existing work compiling the MusicBrainz and Last.Fm dataset (7). Jazz popularity was operationalized based on the percentage of jazz music produced by a single country versus the global production of jazz music. The variables from the Joint EVS/WVS were compared against the popularity of jazz, with the relationship of postmaterialism and jazz popularity being controlled for socioeconomic status. Because a large number of countries in the dataset had less than 0.5% of the global jazz production, the square root of the percentage of jazz production was used to more easily demonstrate the differences between the varied levels of jazz production. Approximately 20 countries were responsible for 90% of the global jazz production. The United States was excluded from all analysis since it was responsible for approximately 65% of global jazz production and its inclusion would have made it difficult to evaluate the jazz production of all the other countries.

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