**(3 points) Using computational methods, evaluate Horkheimer and Adorno's claim that "Culture today is infecting everything with sameness" (2002 [1947]: 94) as it pertains to popular music in the** [**Billboard Hot 100 (Links to an external site.)**](https://en.wikipedia.org/wiki/Billboard_Hot_100)**. Is there evidence of such homogenization in the popular music industry? You should make your case using the data provided in** [**music\_df.csv**](https://canvas.uchicago.edu/courses/39598/files/6619153/download?wrap=1) **(which we worked with in class on Thursday, 2/17), but are welcome to incorporate any additional digital data that you think would help make your case.**

Adorno and Horkheimer claim that "Culture today is infecting everything with sameness". The authors lament that the commoditization of cultural production separates individuals from their innate creativity and imagination, turning them instead into consumers. In this project, I will investigate their claims of cultural homogenization by exploring trends in music production and consumption as operationalized by the Billboard 100's top 100 songs from the 1950s to the 2010s.

To Adorno and Horkheimer, cultural production has come under complete control of commercial imperatives, the need to maximise profits by increasing consumption. The process of production is mechanized to serve the aspects of the consumer most conducive to revenue growth. Consumers are fed a false sense of individuality, masked by pre-defined market segmentations that give the illusion of freedom of choice.

Songs might use different words and beats but are produced in with the same schemes and formulas and for the same purpose. Nothing radical is ever created by a production process more content to recycle pre-existing conventions in differing permutations and combinations. The consumer is lulled into a state of comfort by the predictability of each hit song.

To evaluate this claim, I explore the features of songs from the Billboard 100 to determine if there are observable changes in their content over time. I first examine changes in standard deviation across the different features of the Billboard 100. If culture is indeed becoming homogenized, we should observe decreases in standard deviations across certain metrics as represented by the line of best fit.

My analysis of the textual content of Billboard 100 songs reveals that only the standard deviation of the Flesch-Kincaid readability test has been decreasing since 1950. This indicates homogenization in the complexity of song lyrics. However, other metrics such as the number of difficult words demonstrate increasing standard deviations which weakens the strength of these findings.

My analysis of audio content shows strong declines in standard deviation for loudness and weak declines for danceability, energy, liveness, and valence. Definite proof of homogenization across these dimensions will require further analysis.

To scrutinize the above variations in musical content I plot the means of each feature across time, grouped by clusters. This will allow me to see if the distinct “string lover” and “poetic” clusters are converging in similarity thus lending credence to Adorno and Horkheimer’s claims of homogenization masked by superficial diversity. Based on the best fit lines, I can observe convergence across Flesh-Kincaid readability, energy, speechiness, acousticness, valence, and duration.

Finally, for added robustness of observation, I integrate a new dataset from Kaggle (<https://www.kaggle.com/ironicninja/icm-problem-d>) which contains data for all music between the years 1950 and 2020. I clip the range of the dataset to match that of music\_df.csv and compare trends between the Billboard 100 and the broader music industry. If culture is becoming homogenized, the content of songs outside the top 100 should converge with that of the current most popular songs.

This new dataset only contains features extracted from the Spotify API and is missing features for the textual content. My analysis reveals that the best fit lines converge on energy, loudness, speechiness, instrumentalness, valence, and duration.

Overall, I conclude that the evidence for homogenization is strongest for flesch-kincaid readability, energy, and valence. Valence denotes the musical positiveness in a track and energy denotes the intensity of music. Next, I analyse what could be responsible for these variations.

**(3 points) Develop a theory about what drives the homogenization (or heterogenization) you identified in (1). Draw on social science theory (from this class and/or others) to make your interpretation (for instance, the Frith 1996, Du Gay et al. 2013, and Manovich 2020 readings might be useful). Cite at least 4 peer-reviewed sources in order to make your case.**

The decrease in flesch\_kincaid and valence and increase in energy suggests that music is becoming easier to understand and increasingly negative, with sounds that are more intense. I argue that this homogenization is driven by an increase in social alienation.

Under neoliberal capitalism, market forces work to promote atomization (Kotz, 2009). The individual is primarily viewed as a welfare-maximising consumer who achieves self-actualization through the purchase of good and services at prices set by the invisible hand of the market. In an atomized society, norms of reciprocity are no longer needed to sustain complex social relations (Boykoff, 2011). Instead, individuals can have their every need met through tailor-made products. They are thus separated from the creative forces of imagination needed to produce truly original works grounded in their self-actualization. Music is commoditized both in its production and consumption (Peter, 2020).

The consumer’s value is defined by their purchasing power, which is constructed as being a product of their ability to work hard. Under neoliberal capitalism, the meritocratic system of advancement means that economic losers have only themselves to blame. Consequently, there is less incentive for individuals to cultivate compassion and empathy for the struggles faced by others around them (Wright, 2000).

This process leads to feelings of social alienation as the cold logic of private property replaces the warmth of collective social connections. Consumers chase escapism and the short-term profit maximising incentives of the market serves to create content that is appealing to the base senses and easily digestible (Sharzer, 2021). High-energy songs become prioritised since they can be replayed endlessly in high profit-margin contexts such as concerts and night clubs. Simple lyrics allow these songs to be consumed effortlessly at these venues, memorized with ease to maximise replays, and capture the attention of the consumer.

Escape from this cycle of consumption is only possible through introspection and the cultivation of solidarity with the wider community, understanding that material inequalities are not the by-product of natural laws but are rather the outcomes of an economic system specifically designed to enrich the few (Graeber, 2015). Unfortunately, the individual is kept from this realization through the very cultural commodities they consume which serve to reassure them that their discontent is the product of a world populated by other welfare-maximising individuals who cannot be relied upon. Human nature of the other is irredeemable while the self is the last bastion of all that is good in the world. The consequence is ultimately the production of homogenous songs designed to offer an escape whilst never fostering the empathy needed for true political consciousness.

To summarise, neoliberal capitalism’s continued atomization of society and promotion of consumerism has led to weakened communal ties and less empathy for the most vulnerable members of society. Market logic has infiltrated the political consciousness of the consumer, leading to the idea that what separates economic winners and losers is the presence of a strong work ethic.

Norms of reciprocity are eroded in favour of maximising self-interest. This unfortunately, leads to social alienation which consequently increases the demand for cultural commodities that distract the individual from the helplessness of their condition whilst attributing these feelings to the selfishness of others. The individual is thus shielded from having to perform the introspection necessary to free themselves from this cycle of consumption.

**(2 points) What legisign relationship(s) should exist if your theory explains the observed pattern? How can you computationally test if this legisign relationship exists? Explain in 100+ words.**

If my theory explains this pattern, the replication of music-lyric legisigns that call attention to the suffering of others should be the central factor driving homogenization. On one hand, increasing individualism leads to less empathy for the plight of marginalised individuals. And on the other, this individualism leads to increased social alienation which in turn fuels a desire for escapism, represented by simple, high-energy, low-valence music that distracts the consumer and paints wider society as not worth engaging with. A direct linear relationship between a decline in empathy and homogenization, as operationalized by flesch-kincaid , valence, and energy levels will thus be observed.

To computationally test if this legisign relationship exists, I will use the moral foundations dictionary’s (MFD) (Frimmer et al, 2019), subset of words that indicate the moral virtue of caring. These are words like “kindness”, “compassion” and “empathy” used to symbolise feelings of connection to wider society (Frimer et al, 2019; Turino, 1999). I would expect that as the frequency of replication of these legisigns decreases, the homogenization of music increases. Music gradually loses its ability to tap on the notion communal ties and index feelings or experience of kinship and reciprocity. Songs consequently become increasingly geared towards offering the short-term pleasure of conspicuous consumption.

I build 3 linear-regression models that take the moral virtue of caring (care\_pos) as the dependent variable and readability (f\_k\_grade), positivity (valence), and intensity (energy) as the respective independent variables. To control for the confounding impact of changing genre compositions, I take the year, cluster, speechiness, and interaction term between cluster and speechiness as controls. The results of my analysis are presented below.

**(3 points) Explain in words (300+) how the results of your analysis support (or refute) your theory from (2). What do you conclude?**

My linear regressions show that there is a statistically significant negative relationship between the energy and valence of songs in the Billboard 100 and the presence of music lyric legisigns that advocate for care of others. The r-squared values for both models are low at 0.175 and 0.086 respectively.

The models control for year, cluster, speechiness, and the interaction between cluster and speechiness to prevent genre compositions of the Billboard 100 from confounding the results.I chose to control for cluster and speechiness due to prior research that attributed variations in Billboard 100 genre compositions to be driven by songs that either use more string instruments or spoken words such as rock and rap respectively (Mauch et al, 2015).

The coefficient for Energy ~ Care\_Pos\_Scaled is -0.0551 indicating that every 1 unit increase in energy coincides with a -0.0551 unit decrease in frequency of words reflecting care as a virtue in MFD. The model with Valence as the dependent variable has an approximately similar coefficient of -0.0585.

The presence of statistical significance supports the predictions from my theory. However, these results are qualified by the relatively low R-squared values of 0.175 and 0.086 respectively. It is possible that much of the variation in homogenization is being driven by factors unincluded in the model or the presence of confounders is obscuring the full magnitude of my predictors’ impacts.

In the final model, F\_K\_Grade ~ Care\_Pos\_Scaled the results are not statistically significant and the R-squared value of 0.002 indicates that much of the data is just noise with no predictive power. The simplification of song lyrics must be driven by alternative factors.

All 3 linear regressions are also subject to high levels of multicollinearity between predictor variables. This weakens my results due to assumptions of linear independence amongst predictors in regression models. Additionally, the scatter plots in part 1 also suggest the possibility of a non-linear relationship between my predictors. Further work is needed to improve upon the predictive power of these models.

Overall, I conclude that the market’s promotion of pessimistic and high intensity music is driven partially by a decline legisign replication indexing feelings of care for others. This decline in legisign replication means lyrics no longer contain sinsigns that symbolise these virtues or index prior experience with them. The result is homogenization of music to produce sounds that offer escapism from this loss of social connection (Turino, 1999). However, the same relationship cannot be observed between these declines in legisign replication and increased readability. Simpler lyrics might be the product of changes in other music-lyric legisign replications.

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