

Graduate School of Science and Technology Master's Thesis Abstract

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Thesis title	Analysis based on a global city-level music dataset: Does weather affect people's music appreciation? Analysis based on a global city-level music dataset: Does weather affect people's music appreciation?		
Abstract			
<p>Background: We examine the effect of environmental factors on music listening preferences. Past work has found limited evidence that, depending on seasons and cultures, warmer temperatures are associated with higher arousal music preferences. For example, using an imaginary playlist task, Krause and North (2018) found that participants associated warmer seasons (i.e., summer) with higher arousal descriptors for preferred music. Accordingly, most similar studies examining music preference and weather have relied primarily on self-report methods. In contrast, we rely on naturalistic measures to investigate the relationship between environment and weather.</p> <p>Aims: We hypothesize that higher environmental temperatures would be associated with preference for higher arousal music.</p> <p>Method: Using city-level daily Top-25 chart data from Apple Music as representations of the most popular songs within a city, we collected chart data from N = 103 cities from 6 continents, over 141 days. For each city and date, we additionally collected environmental (weather) factors (temperature, humidity, cloudiness, and atmospheric pressure) and music features for each song on the chart (from Spotify: danceability, energy, loudness, and valence). We applied systematic correlation analyses and regression models (linear mixed-effects models).</p> <p>Results: The correlation analysis showed that, among the weather variables, except for cloudiness and humidity ($r = 0.48$), which had moderate positive correlations, most variables had only very weak positive correlations or almost no correlations. Among the acoustic features, all of them showed strong positive correlations with each other ($r_s = 0.69$ to 0.86) except intensity, which had weak negative correlations with danceability ($r = -0.21$) and rhythm ($r = -0.33$). Between modalities, the only significant correlations between acoustic features and weather variables were for temperature, which had weak positive correlations with danceability ($r = 0.19$), energy ($r = 0.15$), and tempo ($r = 0.15$). However, as simple correlations do not account for variability between cities, we conducted mixed-effects regressions with random slopes and intercepts at both the city-level and date. This way, we found that temperature was positively and significantly associated with danceability ($b = 0.150$, $p = 0.001$) and valence ($b = 0.113$, $p = 0.044$). This study expounds and corroborates the results of related studies with naturalistic data, and adds to the literature on the antecedents of music preferences around the world.</p>			