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Music in Consumer Behavior: The Effect of Background Music on Time Perception for Online Consumers

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ABSTRACT

Background music plays an important role in shaping consumer preferences, decisions, and behaviors. While certain characteristics of music have received considerable attention in prior research (e.g., speed, volume, modernity, etc.), there has been limited attention devoted to the role of music genre in consumer behavior. The current research contributes to this stream of literature by empirically manipulating the genre of background music in an online consumer task and measuring consumer behavior. In pre-registered experiment (N=1,161) online participants were played different genres of a musical composition. Their willingness to pay (WTP) for a variety of hedonic and utilitarian goods was measured, as was their perception of time spent on a task. Unlike past research, the present results shed light on how different music genres affect consumers' time perception in a retail setting. Following a review of the prior literature on music and time perception in consumer behavior, empirical data are introduced, and recommendations are presented for marketing managers and businesses.

Introduction

Background music plays a vital role in businesses. It is a central advertising tool that constructs customers' experiences through variations of dynamics, lyrics, tempos, and many other musical elements. For instance, listening to ice cream truck music while waiting in line to get ice cream is a childhood experience for many. In fact, since the end of the 1800s, when ice cream pushcart owners started singing "in praise of their lemon ice cream and vanilla too" ice cream truck music has become an effective marketing tool that utilizes compelling techniques to attract customers (Waters, 2020). These techniques, which include minimizing the music lengths to less than a minute and keeping the lyrics simple, help customers mentally associate the song with ice cream and support ice cream trucks to communicate a clearer message that portrays its products (Waters, 2020).

Such music can draw on consumers' memories and cultural identities by invoking feelings of nostalgia (Waters, 2020). Feelings of nostalgia in response to certain music create a sense of belonging between the customers and the ice cream trucks, enhancing the feeling of connectedness and self-exploration (i.e., by revisiting their childhood stories) that repeat consumption would allow for (Waters, 2020). Ice cream trucks are one of the many business types that rely on background music to thrive. Accordingly, music is always adjusted to appropriately match the target customers with different goods and services. There are, for example, toy stores that design their own songs and lyrics to specifically target children to strengthen their impressions of the toys that are on sale (MBA Skool team, 2018).

Prior Research on the Role of Music on Consumer Behavior

The mechanism by which consumers form relationships with companies or stores with the help of musical variations has received some attention from prior research. Researchers have asked questions about how changes in certain music elements affect customers' emotional and physical status and have provided respective downstream recommendations

for marketing strategies. In one such foundational paper, Milliman (1986) discusses how the variations of music dynamics and tempos directly impact customers' speed of consuming food and how much food they are willing to order in a restaurant. Milliman finds that consumers tend to eat faster when *fast*-tempo music is played, and, in contrast, when soft *slow*-tempo music is played consumers order more beverages and spend more time finishing their food (Milliman, 1986).

This research finds that consumers' behaviors are correlated with and influenced by the tempo of background music (Milliman, 1986). Specifically, while the speed with which food is consumed and the number of beverages ordered are affected by the tempo of background music, the amount of food ordered remains constant across variations in background music. These results are aligned with the notion that background music tempo can directly control consumers' surrounding atmospheres and psychologically impact their dining experiences, causing them to adjust how much they consume.

Prior Research on Time Perception in Consumer Behavior

To better understand music's effects on marketing and consumer behavior, we may be interested in understanding how consumers' perceptions of time are affected by background music. Time perception is an important and considerably researched aspect of consumer perception that can direct how much time consumers think they have spent in a physical store or on an online marketplace. For example, we might expect that consumers who perceive to have spent more time shopping than they actually spent shopping did not enjoy the shopping experience and could be reluctant to remain in or return to such an atmosphere.

One seminal paper on time perception in consumer research from Robert J. Graham, states that multiple variables can contribute to the importance of learning consumers' perceptions of time for the purpose of marketing strategies (Graham, 1981). For instance, Graham emphasizes the two different scenarios of buyers' predispositions toward the information presented in a store. On the one hand, buyers might not be looking for specific products that meet their specific needs, and they are randomly evaluating the available items to select (Graham, 1981). In such a situation, consumers might overestimate the amount of time spent in a store as no concrete pre-set goals have been met. On the other hand, consumers might have a clear and specific sense of what they are looking to purchase when they enter a shopping environment and can start to lose patience if such items are not found, resulting in *under*-estimation of the passed time (Graham, 1981). This distinction between over-estimation of perceived time and under-estimation of perceived time indicates that consumers' initial shopping purpose connects with their feelings in a store, and subsequently affects time perception.

Prior Research on Music and Time in Consumer Behavior

In addition to affecting consumers' shopping intentions, the background music also plays an important role in influencing consumers' time perception by changing their in-store experience. This idea is most evident in the empirical work of Kellaris and Kent (1992) who investigate whether variations in musical modality can influence consumers' time perception as their feelings towards their immediate surroundings change. When participants are subjected to different music modes in a certain retail setting, the researchers find that the longest time estimates are produced when a piece of major key music is played, while shorter time estimates are produced when a piece of minor key music is played (Kellaris and Kent, 1992).

Importantly, both major and minor key music appears to produce higher consumers' time perception than atonal music, suggesting that conventional major and minor music modes are more positively connotated than the atonal modes. Kellaris and Kent (1992) argue that the mechanism underpinning their observed effect can be explained by differential effects of conventional (vs. atonal) music modes on feelings of pleasantness in the musical sound, thereby directing consumers' attention towards their physical surroundings. The authors claim that an increase in

attention to surroundings accompanied by feelings of increased pleasantness results in greater processing fluency of presented information, resulting in consumers perceiving wait times as shorter (Kellaris and Kent, 1992).

Bridging Prior Findings in the Present Research

Building on prior research to investigate the effect of music on consumer behavior, the present research focuses on exploring how consumer time perceptions and subsequent behaviors could be altered when exposed to different music genres. In a pre-registered empirical study with online participants, I investigate how different genres of background music affect judgments of passed time and willingness to pay for both hedonic and utilitarian products. Stimuli were identified using a pre-tested survey of different genres of a musical composition, ensuring that stimuli vary in perceived genre but not in other possible confounds such as speed, emotional reaction, valence, etc. Pre-tested stimuli were then implemented in a between-subject experimental design with three different genres (jazz, classical, and folk). Methodology, analyses, and results are presented below followed by a discussion of the implications and consequences of my findings.

Methods

Pretest

Before proceeding with the primary experiment, preliminary research was undertaken to identify stimuli of different genres. Pre-tested participants on Lucid (an online survey-taking platform) were presented with 10 renditions of a single composition and asked to provide their emotional reactions and perceptions. Doing so ensures a proper selection of song versions that clearly lie within a specific genre, thus ensuring that stimuli vary on the key feature of interest (genre) but not on possible confounds for the primary experiment. There were three main steps in the pretest procedure.

First, 10 renditions of Amadeus Mozart's *Eine Kleine Nachtmusik* were found on YouTube, including renditions of jazz, epic, guitar, rock, classical, folk, etc. The videos were exported and edited to ensure that no track lasts less than 145 seconds or more than 150 seconds and all start at the same time. Videos were then stripped of visual stimuli and converted into mp3 files so that they could be uploaded onto the Qualtrics platform, used for designing experimental surveys.

Next, 100 participants on Luci (a survey-taking platform) were paid to listen to a randomized subset of 5 of the 10 renditions (counterbalanced across participants). Participants are to classify the genre that most resembles each rendition (options include classical, jazz, modern, country, and pop). Participants are also asked to provide judgments of how fast each rendition feels to them on a scale from (1) extremely slow to (5) extremely fast. Participants are then asked about their emotional reactions (sad, happy, excited, scared, rushed) in response to each rendition on a 7-point scale ranging from -3 (not at all) to 3 (very much so). The order in which renditions were presented was also randomized across participants.

The results of the pre-test provided average ratings of genre distributions, emotional ratings, and speed perception for each of the 10 renditions of Amadeus Mozart's *Eine Kleine Nachtmusik*. Histograms were generated to indicate the frequency choice of genres relative to a particular rendition. Three renditions of the 10 pre-tested renditions were selected for the primary experiment. Renditions were selected such that they had greater than 80% consensus on a specific musical genre (folk, jazz, and classical) among participants who were presented with that particular rendition. Renditions were also selected to ensure that average ratings of emotional valence, speed, and feelings of being rushed did not vary substantially across stimuli.

Primary Experiment

The methodology and analyses for the primary experiment were pre-registered on AsPredicted (https://aspredicted.org/FV2_5LY). 1,161 participants with a mean age of 44.9 years old and a gender distribution of 49% male were surveyed using Lucid, an online survey-taking platform. Participants were randomly assigned to one of the three between-subject conditions: (i) Classical background music during the consumer task; (ii) Folk background music during the consumer task; (iii) Jazz background music during the consumer task. The stimuli used as background music, which were selected from a pretest of stimuli, were different renditions of Amadeus Mozart's *Eine Kleine Nachtmusik* with a duration of 2 minutes and 45 seconds.

Participants were presented with a selection of 20 consumer products (10 utilitarian products and 10 hedonic products) and were asked to input the amount they would be willing to pay (in US Dollars) for each product. Prior to the task participants were asked to ensure that their sound system was working properly and that they would be able to hear any sounds during the task. During this task, one of three musical renditions of Amadeus Mozart's *Eine Kleine Nachtmusik* was played in the background. After inputting their willingness to pay for each of the 20 products, participants were asked to estimate (in seconds) how much time they had spent on the price-elicitation task.

To ensure the accuracy of data, certain participants were excluded for inattentive and non-numerical responses to the questions; these included participants inputting any perceived time measures greater than 50 minutes, and any willingness to pay greater than 1x10^10 US dollars. The key measure of interest, the difference between the perceived time spend on the task and the actual time spend on the task, was then regressed on an intercept (reflecting the average across all three conditions) and a set of two orthogonal contrast codes reflecting the three between-subject conditions of the genre (-2, 1, 1) and (0, -1, 1).

Results

Figure 1 shows that participants spend approximately 3.43 minutes on the consumer task, with no variance in the actual time spent on the task across conditions. Figure 2 shows that participants also did not vary significantly in how much they perceived to have spent on the task. However, upon a comparison between figures 1 and 2, it is clear that participants underestimated how much time they spent in all of the three conditions ($b = -68.57$, $t(783) = 9.26$, $p < 0.001$). We find that the extent of underestimation varies based on what music was played in the background. As shown in figure 3, participants underestimate the time to a greater extent under folk background music than those under jazz or classical background music ($b = -11.27$, $t(783) = 2.16$, $p = 0.031$). We also find some directional evidence suggesting that the underestimation may also be greater for jazz music compared with classical music, but this difference is not statistically significant ($b = -15.35$, $t(783) = 1.69$, $p = 0.092$).

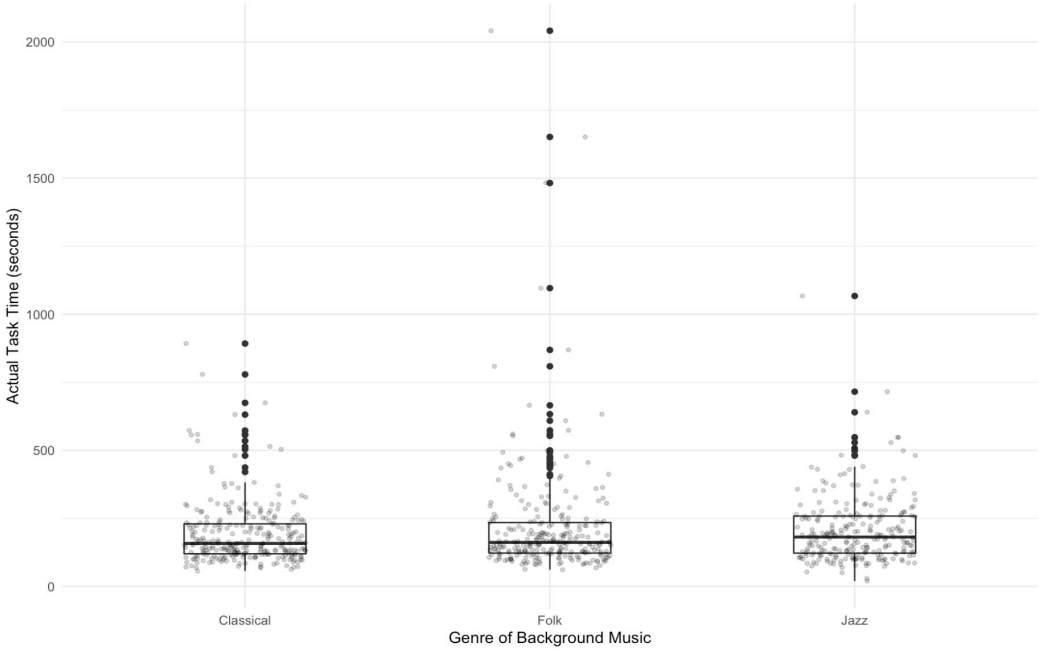

Figure 1. The actual task time in the three conditions: classical, folk, and jazz background music.

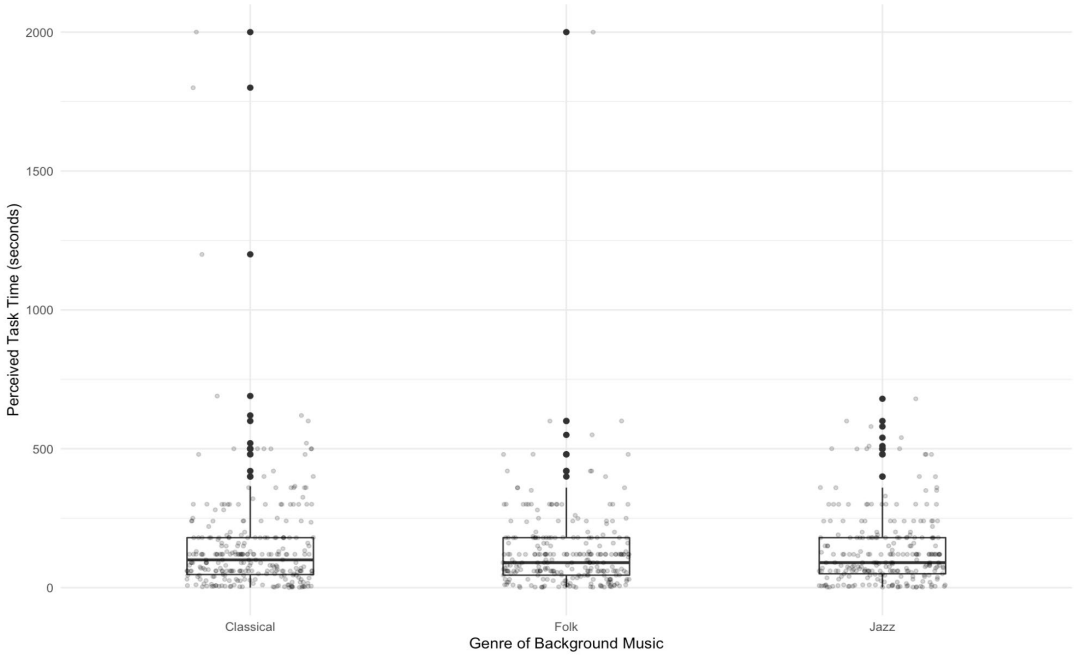

Figure 2. The perceived task time in the three conditions: classical, folk, and jazz background music

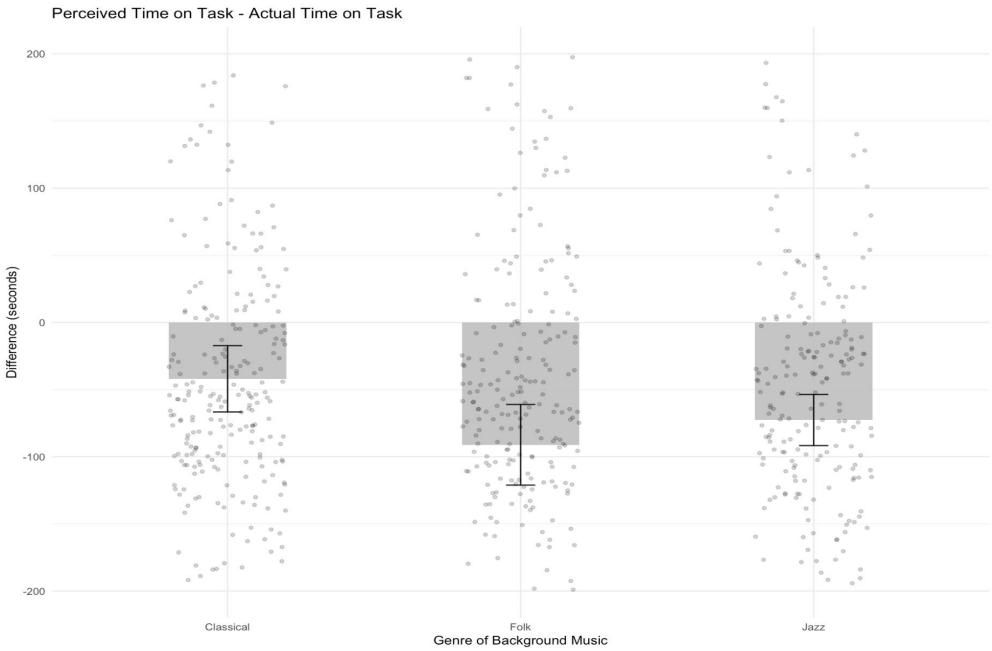

Figure 3. The time differences between the perceived time on task and the actual time on task in the three conditions

In terms of participants' average willingness to pay for the types of products ($b = 18.81$, $t(783) = 10.90$, $p < 0.001$), we do not find it to differ across conditions of different background music genres. Among the 20 products presented, 10 were hedonic products (e.g. pen, scarf, gloves) and 10 were utilitarian products (e.g. screwdriver, glue, blender blades). The participants' average willingness to pay for hedonic products ($b = 19.60$, $t(783) = 8.99$, $p < 0.001$) and the participants' average willingness to pay for practical products ($b = 18.03$, $t(783) = 9.34$, $p < 0.001$) do not vary across the three conditions. We also do not find a significant difference in the magnitude of willingness to pay for utilitarian versus hedonic products.

Upon deeper analysis, however, we find that the genre of background music does affect participants' willingness to pay for particular products. For instance, in terms of participants' willingness to pay for a presented toaster ($b = 33.75$, $t(783) = 7.72$, $p < 0.001$), participants who heard classical background music were somewhat more willing to pay more for the toaster than were those who heard jazz background music ($b = 9.98$, $t(783) = 1.86$, $b = 0.063$).

General Discussion

The results of this experiment have reflected the effect of different music genres on consumers' time perceptions and willingness to spend for goods. On the one hand, the results agreed with certain ideas listed in the introduction of this paper. On the other hand, they have also challenged and opposed some of those ideas. Additionally, the results have yielded some unexpected indications, such as the difference in participants' time underestimation in folk background music compared to jazz or classical music.

One of the most noticeable agreements between the prior research and the result is the consumers' time perception across different music. The result shows that there is no significant difference in how much time participants believed they spent between the three conditions, in which all the background music is based on major or minor keys. This aligns with the ideas presented in Kellaris and Kent's study, that both major and minor key music appears to produce the same consumers' time perception (Kellaris and Kent, 1992). Additionally, the results of the present

empirical work finding greater under-estimation of time spent on task in the case of background jazz (vs. classical) music are aligned with prior work suggesting that atonal music (i.e., jazz) can differentially affect time perception compared to major/minor (i.e., classical), music (Kellaris and Kent, 1992).

The present results also show some unexpected findings that were not considered in previous studies. First, I find that participants are more likely to underestimate time spent on tasks in the context of folk background music than in the context of jazz or classical background music. This finding presents the importance of considering different under-studied music genres, such as folk music's effect on consumer behavior and time perception. Additionally, the result shows that participants underestimated how much time they spent in all three conditions.

In terms of willingness to pay, my results agree with the common conception that classical music could prompt people to pay more than jazz or other background music (Sheerin, 2018). However, my findings are not aligned with the particular types of products consumers may be willing to pay more for while hearing classical music. The current research finds that consumers are willing to pay a higher price for household products such as a toaster, while a previous study claimed that classical music prompts consumers to pay more for luxury goods such as wines (Sheerin, 2018). Although the reason behind such diversions is unclear, the experiment does show that, under the manipulation of the same experimental durations, the average willingness to pay directionally increases marginally for all types of products while listening to classical music. Therefore, it is possible that the time participants spend to complete tasks could change how much they are willing to pay regardless of what genre of music is played.

Conclusion

This research advanced the study of social behaviors by finding musical genres' effect on people's time perception and willingness to pay. It verifies a few concepts from previous research and presents new indications that are unprecedented in the past. In particular, the finding of less time perception in one music genre than the other suggests that, aside from music tempos, dynamics and lyrics, different music genres also have the power to subconsciously influence consumers' time perception. This finding adds to a better understanding of various music facets and how they influence the duration consumers are willing to stay in a particular shop under a particular genre of background music. Additionally, it is interesting to note that, at least in this research, music genres only change participants' willingness to pay for a toaster. This finding is quite shocking because there is no clear evidence to explain why listening to a particular genre of music would prompt an individual to spend more on a toaster, which is an area that future researchers can investigate to clarify such a phenomenon.

With the need to better understand consumers' preferences and behavior when a marketing strategy is implemented, the findings presented in this paper would help marketing managers to gather more references for designing their in-store and out-store advertisements that could effectively improve their consumers' satisfaction, and subsequently raise business sales. There are two major marketing recommendations this paper would like to provide based on the results of the experiments. First, marketing managers should confirm the environment and emotional feelings they want to infuse in their consumers before choosing the genre of music. For instance, if they want their consumers to underestimate their time as much as possible so that they can consume more wines at the bars or order more food on the table, the managers can play folk background music to generate such effects. Second, marketing managers could raise their customers' willingness to pay by selecting the background music genre based on the product itself. If the managers are selling toasters, for instance, they should play classical music in the background to maximize how much the customers would pay for their toasters. The present research has expanded the study of musical effects on consumers' behavior, investigating the effect of background music on consumers' time perception. These findings can assist marketing managers, suggesting that it may be important to consider what genre of background music is played in retail environments in order to affect consumer experiences.

Limitations and Future Directions

There are a few improvements that could be made for related future studies. First, researchers could use more realistic experimental settings that generate more accurate outcomes. In this research, only pictures and music recordings are used for consumer tasks, which might be the reason for some of the unexpected outcomes such as underestimation of time on all three conditions. Additionally, researchers can limit the amount of time for consumer tasks, which avoids unintentional variables that could affect participants' performance. I welcome extensions of this work in a field setting, manipulating the music played at physical stores or in online consumer settings.

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