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Does Music Affect Visitors' Choices for the Management and Conservation of Ecosystem Services?

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Abstract: Psychological research has long demonstrated that preferences can be influenced by stimuli coming from the environment. Music, as an external stimulus influencing people behaviours, purchasing processes and spending, has been widely analysed in consumer behaviour and marketing literature. Here, we focus on the effect of music genres on preferences and willingness to pay for selected ecosystem services of a Nature Park when they are elicited with a Discrete Choice Experiment. This aspect is important in non-market valuation because music can represent an element of context-dependence for the assessment of individual choices, so that the assumption of preference stability does not hold, and welfare estimates may be biased. The results of a generalized mixed logit model evidenced a significant effect of music on preferences. If elicited preferences depend on the context on which the survey is implemented, wrong information to decision makers is provided when the choice context is altered by an uncontrolled external stimulus. This result is particularly important for applied researchers and policy makers. First, the use of protocols and guidelines that instruct respondents about the ambient background when answering a questionnaire is highly recommended, particularly for online surveys. Second, specific genres of music should be used in educational and ecosystem services conservation campaigns and also piped in visitor centres and virtual tours to encourage nature conservation and improve visitors' sensitiveness for the environment.

Keywords: choice experiment; context-dependence; music; conservation measure; nature park

Citation: Notaro, S.; De Salvo, M. Does Music Affect Visitors' Choices for the Management and Conservation of Ecosystem Services? *Sustainability* **2021**, *13*, 10418. https://doi.org/10.3390/su131810418

Academic Editors: Antonio Boggia and Julia Touza-Montero

Received: 17 July 2021
Accepted: 14 September 2021
Published: 18 September 2021

1. Introduction

The economic valuation of ecosystem services is of central importance [1] since defining their benefits to society in monetary terms informs policy makers about societal preferences [2]. Stated preferences techniques are widely used in monetary valuation [3,4], and among them, Discrete Choice Experiments (DCE) allows for explicitly taking into consideration the trade-offs among different ecosystem services [5].

With Discrete Choice Experiments, respondents make choices over goods or policies presented in choice cards. They include a number of hypothetical scenarios in which attributes and levels are combined. One scenario represents the status quo, denoting the current situation or a future situation in the absence of intervention. The inclusion of a cost attribute allows for the calculation of the willingness to pay for any change in attributes or levels [6].

DCEs are based on the assumptions that individuals make rational choices and that preferences are stable and consistent [7]. Nevertheless, behavioural anomalies can exist also in hypothetical markets, leading to non-rational choices [8]. In particular, external stimuli lead individuals to receive information in a different way and thus may influence their choices, perceptions and behaviours [9,10]. Consequently, inferred preferences might be biased, leading to communicating the wrong policy recommendations to decision makers.

Several stated preferences studies have tested the effect of artistic elements on the willingness to pay for environmental services. For instance, film clips were used to induce

negative emotions (disgust and sadness) in a DCE aimed at evaluating a reduction in the environmental impact of stone mining [11]. Photographs and animated images were employed to investigate in a Contingent Valuation study the influence of environmental art on individual willingness to purchase voluntary carbon offsets [12]. Short video clips were used to induce happiness and sadness in a lab experiment for exploring the role of emotions on the WTP for beach recreation in New Zealand [13]. The effect on preferences and willingness to pay for wildlife conservation of pictures of reassuring and dangerous wildlife was estimated in a DCE in the Italian Alps [14].

Environmental music is an artistic element that acts as an external stimulus affecting emotions, perception of time, behaviour and particularly consumers' behaviour [15]. The influence on consumer's behaviour has been investigated by several experimental studies carried out in natural settings to analyse in-store traffic flow [16], sales volumes (i.e., [17,18]), product choices (i.e., [19]), time elapsed in a commercial area (i.e., [20,21]) and perceived waiting duration [22] or shopping time [23]. In particular, the marketing literature has shown how the structural components of music (musical tempo, volume and mode), the preferential dimension (liked or familiar music, high level of fit, popular music) or genre (e.g., classical, jazz) have an influence on the evaluation and satisfaction of a store or a service, the time spent in the store, purchase intentions, sales volume and patronage behaviour [15]. In particular, classical music has been associated with more consumers' spending [18,24–26]. One of the aims of this body of research is to understand which music is the most appropriate in different contexts, e.g., different kind of shops, bars or restaurants.

The purpose of this paper is to analyse whether and to what extent music influenced visitors' preferences and willingness to pay for selected ecosystem services of Monte Baldo Local Natural Park, a nature park located in Northeast Italy. A Discrete Choice Experiment was applied in the valuation. According with the authors' knowledge, this topic has not yet been investigated.

The sample was split into two treatment groups and a control group. In the treatment groups, respondents listened to classical music, "Sonata in D Major for Two Pianos, K. 448" by Mozart, and to jazz music, "Dr. Jekyll" by Miles Davis. The control group completed the questionnaire without listening to music.

Following the findings of the psychological and consumer behaviour literature, we tested the hypothesis that when listening to classical music, visitors of the park are more likely to choose policy alternatives rather than the status quo. This is because classical music is more associated with calm and meditative emotions [27]. We expect that people in this state pay more attention to making trade-offs among attributes and levels. Conversely, we assume that the status quo alternative has a higher probability to be chosen when listening to jazz music, since this music is associated with vitality states [27]. In our expectation jazz music leads people to answer more quickly to the questionnaire, paying less attention to making trade-offs.

The paper is developed in four sections after this introduction. Section 2 provides a review of the literature on the effect of music on behaviours and consumers' spending. The third section describes our methodology, while in the fourth section results are presented. Lastly, the fifth section discusses the results.

2. The Effect of Music on Behaviours and Consumers' Spending

Music, as an external stimulus influencing people behaviours, purchasing processes and spending, has been widely studied in the psychological literature and consumer behaviour and marketing literature. It has been shown that music has an effect at the cognitive level and on emotions [28,29]. Indeed, a body of literature studied the effects of music on the improvement of space-time reasoning skills, understanding and memorization. This literature in the 1990s proved the existence of the so-called "Mozart Effect". Rauscher [30] affirm the correlation between listening to Mozart's sonata K. 448 and the increase in reasoning skills of individuals. Jaušovec and Habe [31] show that some areas

of the brain activated by music are in common with areas related to reasoning and that, therefore, music facilitates learning [32]. Emotional responses varied greatly according to musical genre, tempo, volume and mode. Classical music has been shown to be more associated to peaceful and sadness affective states (e.g., calm, serene, sweet, meditative, spiritual feeling, feeling of transcendence, melancholic, sad, depressed). On the contrary, jazz has been related with vitality states (e.g., happy, joyful, stimulated, energetic, euphoric, exciting, irritated) [27]. Happiness has been shown to be associated with fast tempos and the major mode, while sadness with slow tempos and the minor mode [33].

Music (as well as lights, colours, perfumes) appears to be one of the atmospheric factors that can be used to create the so-called sensory environment. This is defined as a context in which the judgments and perceptions of individuals about places, goods or services can be influenced [34,35]. In the 1970s, Kotler [36] introduced the term "store atmospheric". This atmosphere can be created in a store for determining the consumer shopping experience, in particular, varying purchase decisions, spending levels or the time spent inside the store. Starting from the work of Mehrabian and Russel [37] the marketing literature assumes that shoppers' emotional states mediate the link between the store atmospherics and consumer behaviour. Therefore, particular atmospheric elements are used to induce positive emotions in consumers, for generating positive in-store or products evaluations or larger purchases. In particular, for its ability to influence the decisions and behaviours of consumers, music has been considered by the operators of the marketing sector as one of the tools in which to invest in [29,38].

The theoretical framework for the study of the effect of music on consumers' behaviour and spending derives from environmental psychology [39], which indagated the stimulus–organism–response relationship. Overall, the presence of in-store music has a positive influence on sales volumes [15], product choices (i.e., [40]), time elapsed in a commercial area (i.e., [20,21]) and perceived waiting duration [22,41] or shopping time [19].

A number of studies evidenced the impact of different styles of environmental music, genres, the tempo (slow or fast), the rhythm, the mode (major or minor), the harmony or the volume on consumers' behaviour and choices [29]. These factors, also called "structural properties" of music, have been seen to affect judgments about a store (whether positive or negative), the time spent in a shop or restaurant, the average amount spent or even the quantity purchased of a product [42,43]. Table 1 summaries empirical evidence produced on this topic by the literature. Overall, all these studies show how music has been able to change consumers' behaviour, spending and perceptions.

Table 1. Effects of the structural properties of music on consumers behaviour, spending and perceptions.

Structural Property of Music	Effects on Consumers Behaviour, Spending and Perceptions	References
Volume	The volume seems to have a different effect according to different places and consumers. Empirical evidence suggests that high-level volume in a bar led seems to increase, for instance, alcohol consumption due to physiological and psychological over-activation, which encourages people to consume more. On the other side, low volume music led to increased sales of healthy foods, because it tends to induced relaxation whereas high volume the sales of unhealthy food. A high volume in a supermarket seems to lead to a reduction in the time spent inside, whereas low volume in an oceanside restaurant led to an increase in the average bill.	[38,44–46]
Tempo	Slow music seems to lead to greater attention of customers to products and their purchase. In a supermarket context, slow time tended to slow down customer walking speed and increase sales volume, while the effect of fast time was the opposite, even if customers were not paying attention to the music. Slow tempo encouraged customers to spend more time dining and increased the amount of money spent while a different perception of time was not found. Students seem to increase the consumption of drinks with fast tempo.	[16,47–49]
Mode	Music in a major mode positively influences mood, which in turn was correlated with greater sales than music in a minor mode. Combination of slow music in minor mode led to higher purchases.	[29,50]

Table 1. *Cont.*

Structural Property of Music	Effects on Consumers Behaviour, Spending and Perceptions	References
Genre	There are many studies that analyse the impacts of musical genres on consumers, in order to influence their purchasing behaviour and spending. Some studies demonstrated that drinking songs increase the length of time customers stayed in a bar and the average amount spent compared to Top-Forty music and cartoon music. Background music affected money spent in a flower shop, with love songs and romantic music leading to a higher mean amount of money spent relative to pop music and no music. Classical music has been shown to contribute to significantly lower the sound volume of people chatting, probably due to its calming virtues. Classical music lowered the volume of the conversations in a cafeteria of a US campus, compared to country music, while hard rock increased the volume of the conversations. Classical music also induces politer and more altruistic behaviours. In English children's canteens, classical music decreased not only the volume of the conversations but also acts of rudeness. Indeed, classical music has been associated with quite affective states. Furthermore, with classical and pop music, the sales volumes were higher and that customers were willing to pay higher prices than with easy listening music and in the condition with no music. The reviews attributed to the venue were also more positive with classical and pop music. In a wine store, classical music influenced shopper to spend more and select more expensive wines than Top-Forty music. Similarly, in a British restaurant with classical music, people ordered most expensive courses and the average bill was approximately 10% higher than with Top-Forty music or in absence of music. Different types of music—jazz, popular, easy listening and classical – had a different effect on what patrons were prepared to spend and the money they actually spent in a restaurant in Sydney. While with classical music people tended to stay longer, jazz music produced an increase in the consumption of alcoholic beverages. Overall consumers were willing to pay more with classical, popular and jazz music. In a laboratory setting, those who had listened to country music were willing to pay more for "utilitarian" products while those who had listened to classical music were more willing to pay more for "social identity" products. In the condition of absence of music, on the other hand, the participants attributed similar prices for both types of goods. Music genres affect consumer behaviour in a different way, depending on the context. In an experiment, for instance, playing French and German music in an in-store display of wines of a supermarket, French music led to French wines outselling German ones and vice-versa. The music acted as a prime because consumers stated they were unaware of the effect of music on their product choices. These results were not confirmed in a wine shop, probably because, according to the theory of heuristics, in a supermarket the information to process is a lot in a short time, so that people often use heuristics and stimuli offered by the environment. In Japanese-themed and a Mexican-themed restaurant chains in Singapore, a mixture of pop and traditional music increased consumers' expenditure.	[18,19,24–27,51–56]
Combination of structural properties	People spent more with music rather than without. With commercial music at low volume money spent increased more than with fast music at high volume. According to Australian hospitality managers music makes customers stay longer than they otherwise would. In Mexico customers are more likely to make purchases when music is played in English than in native language.	[56–59]

This study investigates the effect of music genre on elicited preferences and willingness to pay for ecosystem services, by testing the following research hypotheses:

Hypothesis 1 (H1). *Music genre affects preferences for ecosystem services conservation. In particular:*

Hypothesis 1a (H1a). *Classical music favours the adoption of measures aimed at encouraging the production of ecosystem services, inducing visitors of the park to choose policy alternatives.*

Hypothesis 1b (H1b). *Jazz music leads people to prefer the status quo option.*

Hypothesis 2 (H2). *Music genre affects the magnitude of compensation required by the respondents who prefer the status quo option.*

Hypothesis 3 (H3). *Music genre influences the time needed to complete the questionnaire inducing a significant effect on perceived time.*

To give an answer to these questions, two pieces of different genres were therefore used in this study to test the effect of music. Mozart's Sonata K.448 was selected (normally used in all the experiments that test the so-called "Mozart Effect") for the classical music and "Dr. Jekyll" by Miles Davis for jazz music. These two pieces were considered adequate to evaluate the influence of different genre since both pieces are instrumental and with a fast tempo. To avoid the risk that other structural properties of the music affect respondents' choices during the choice experiment, the songs were played at the same volume, which remained constant for the whole time.

3. Materials and Methods

3.1. The Study Area

Preferences for ecosystems services conservation were evaluated for the Monte Baldo Local Nature Park (MBLNP), a nature park located in Trentino (Northeast Italy). The park covers 4.650 hectares at an altitude between a few hundred meters above sea level and beyond 2000 m. MBLNP has a rich flora biodiversity. For its importance in biological variety and variability of plants since 1400, it was called "Hortus Italiae" (Garden of Italy). The great variety of herbs and flowers is the basis of the quality food products produced in the park, such as a typical cheese produced in mountain pastures. The park has also a high fauna biodiversity, including some rare amphibians such as the Yellow-bellied Toad (Bombina Variegata) that is protected also by the European Union. The park is visited by summer tourists for walking, hiking, mountain biking, picnicking and enjoying the landscape.

MBLNP is part of the Reserves Network (RN) of Trentino. RN is a network of Natura 2000 areas and other regional and local protected areas managed by local communities with a participatory approach. The network has the aim of defining direct measures for the protection of biodiversity, as well as the maintenance of traditional agriculture and handicrafts and their integration with sustainable tourism [60]. In this framework, the park's goal is to preserve the naturalistic specificities and support traditional local activities, from animal husbandry to agriculture, to pursue an economic development based on sustainability. Before the institution of the RN, the park was managed by the Province of Trento so that management actions were tailored to the local environmental and socioeconomical conditions were not implemented.

3.2. Survey Design and Administration

We conducted an intercept survey on site from June to September 2017 with face-to-face questionnaires submitted to a random sample of visitors. We used a non-list sampling procedure since a list of the population of visitors to the MBLNP does not exist. The questionnaire was designed according to the guidelines for stated preferences studies available in the literature [8,61]. It begins with warm-up questions and questions on the actual visit to the park, followed by information on the management of the park. The second part presents attributes and levels, a script to ensure policy consequentiality [62] and the choice cards, followed by some cognitive questions (The influence of an extended theory of planned behaviour on preferences and WTP is examined in [63]). The last section contains sociodemographic questions.

Relevant attributes and levels were selected with experts and scientists, managers of the RN and Monte Baldo Local Nature Park and based on local stakeholders' consultations about park objectives and management actions.

Two attributes considered management actions for the protection of biodiversity–flora and fauna biodiversity through the protection of the Yellow-bellied toad. Other two attributes were referred to management actions for the development of sustainable tourism—trails and the incentivization of local organic products. To protect flora biodiversity, it is necessary to mow the meadows or control sheep pasture. The levels for this

attribute were therefore medium biodiversity obtainable with controlled sheep grazing and high biodiversity obtainable through the mowing of meadows. Sheep grazing does not allow to reach a high level of biodiversity because the soil would not be more suitable to the growth of wild orchids. The protection of the Yellow-bellied toad is possible through management measures aimed at the restoration and conservation of mountain puddles where the toad lives. Trails contemplate two levels. The first level contemplates their restoration and improvement through placing signposting on the trails and the creation of topographic maps also in digital format. The second level contemplates just the restoration, that is, making trails safe and clean. The fourth non-monetary attribute concerned the availability of local organic products (at zero kilometers) in farms, alpine huts, markets, restaurants and hotels. The monetary attribute was an entry ticket to the park, for funding the above-mentioned local management measures. The amounts tickets presented to respondents were decided on the basis of results of previous similar surveys implemented in nearby areas [64–66] and were as follows: EUR 3, EUR 6, EUR 9, EUR 12, EUR 15 and EUR 18. The status quo was associated with the abandonment of local management (with no access fee and attributes at zero or at the lowest levels) for a centralized management undertaken by the Province of Trento.

We conducted a pilot test using a sample of 66 visitors for testing wording, attributes, levels and collecting priors, using an Optimal Orthogonal Choice Design for combining attributes and levels in the choice cards [67]. A sequential design [68] was instead generated for the final survey. We employed the data of the pilot for preparing a first D-efficient design and the data of the first 383 questionnaires for improving the efficiency of the design. All experimental designs were generated using NGene software [69]. Respondents completed 12 choice cards, each of which was composed by two efficiently designed scenarios and the status quo. They stated their best choice over the initial three scenarios and their worst choice among the two scenarios remaining (Figure 1) [70]. Policy alternatives are costly alternatives, while the status quo is not associated with any entry ticket.

		A Scenario	B Scenario	No local management
	Biodiversity of the meadows	Medium	High	Low
	Protection of the Yellow-bellied Toad	No	Yes	No
	Trails	Restoration and enhancement	Restoration	No actions
	Local organic products	No	Yes	No
	Entrance ticket	8 €	12 €	0 €
Which one is your favorite scenario?				
Which one of the remaining two is the worst scenario?				

Figure 1. Example of choice card.

To test if music is able to influence preferences and willingness to pay of visitors, the sample was subdivided into three different treatments. Two treatments involved listening to music with headphones while filling in the questionnaire: one subsample (136 respondents) listened to classical music (Mozart's K.448 sonata) and the others 128 respondents

listened to jazz music (Miles Davis's "Dr. Jekyll"). The control treatment required the completion of the questionnaire without listening to music.

3.3. Model's Specification

In order to account for preferences and scale heterogeneity in our sample, the generalized mixed logit model is used [6,71]. This model assumes that coefficients are individual-specific and follow a random distribution, for which a location and a scale parameter is estimated:

$$P_{ni} = \int \frac{e^{\beta'_n X_{ni}}}{\sum_j e^{\beta'_n X_{ni}}} \varphi(\beta|b, \Omega) d\beta \quad (1)$$

In which:

$$\beta_n = \sigma_n[\beta + \Delta z_n] + [\gamma + \sigma_n(1-\gamma)]\Gamma v_n \quad (2)$$

where:

Z_n = a set of M characteristics of individual n that influence the mean of the taste parameters;

v_n = a vector of K random variables with zero means and known (usually unit) variances and zero covariances;

σ_n = the scale factor of the idiosyncratic error term that varies among individuals. It is assumed to be log normal distributed with mean $\overline{\sigma}$ and standard deviation τ; τ is the key parameter that captures the unobserved scale heterogeneity;

γ = a weighting parameter that indicates how variance in residual preference heterogeneity varies with scale in a model that includes both. It expresses the relative importance of the overall scaling of the utility function σ_n, as opposed to the scaling of the individual preference weights;

X_{nj} = the K attributes of alternative j in choice situation t faced by individual n;

$\varphi(\beta|b, \Omega)$ is the probability density function of the distribution of the coefficients.

To test if the genre of music listened leads to differences in observed choices, the status quo parameter was interacted with a dummy representing being interviewed with listening to the classical music or jazz music, relative to the no music treatment.

Willingness to pay was estimated as a ratio between the derivative of non-monetary coefficients and the derivative of the cost coefficient using the Krinsky–Robb procedure with 700 draws [72]. We estimated the generalized mixed logit model using Limdep Nlogit (version 6.0) [73].

4. Results

Among the respondents, 50.06% of the sample was male and the average age was 43 years old. Most of the respondents achieved a high school education (53%), and an additional 37% obtained a university degree. Moreover, 44% of respondents had a net income between EUR 10,000 and 30,000, whereas 19% made less than EUR 10,000 and the remaining 37% made more than EUR 30,000. Descriptive statistics of the sample are similar to the average regional tourist reported in the official reports on tourism in Trentino.

The results of the generalized mixed logit model are provided in Table 2.

The coefficient of the management measures for the selected ecosystem services are all positive while the status quo coefficient and the cost are negative. The negative sign for the status quo shows that people prefer local measures to managing ecosystem services instead of a centralized management that does not allow for specific management measures. The negative sing of the cost coefficient indicates that utility decreases with higher prices of the entry ticket.

Considering the relative importance of the different attributes, the most preferred management measures to be provided to the visitors is the restoration and enhancement of walking paths, whereas just making trails safe and clean is much less important to our respondents. The protection of the Yellow-bellied toad through the restoration and conservation of mountain puddles is the second most important management measures

for the visitors of the park. It is followed by the incentivizing of local organic products by allowing their availability in farms, alpine huts, markets, restaurants and hotels. Despite the importance of the park for plant diversity, increasing the biodiversity of the meadow is the least preferred management measure. However, visitors of the park prefer a high flora biodiversity obtainable through the mowing of meadows than a medium biodiversity attainable through controlled sheep grazing. All standard deviations are statistically significant, indicating heterogeneous preferences among respondents for the different management measures of the selected ecosystem services.

Table 2. Results of the generalized mixed logit model.

Attributes	Mean Coefficient	*t*-Test	Standard Dev. Coefficient	*t*-Test
Main Effects Coefficient				
BioM	0.29328 ***	7.98	0.40891 ***	6.59
BioH	0.75190 ***	15.42	0.49415 ***	9.23
Toad	1.13207 ***	18.45	0.99148 ***	17.36
Trail1	0.79386 ***	14.65	0.59163 ***	10.09
Trail2	1.44244 ***	18.66	0.90869 ***	13.88
Prod	1.00140 ***	18.61	0.56788 ***	11.57
SQ	−5.93338 ***	−16.30	2.30366 ***	13.29
Cost	−0.22787 ***	−48.40		
Interactions with the SQ and type of music				
Classical	−0.58476 *	−1.67	4.43207 ***	15.33
Jazz	1.14804 ***	3.36	2.21478 ***	7.88
Random scale parameters				
TauScale	0.98504 ***	27.20		
GammaMXL	0.11953 ***	5.79		
Sigma	0.98600	0.84		
Obs	19,656			
Respondents	819			
log_L	−10,951.05241			
McFadden's R^2	0.4916321			

* and *** indicate significance levels at 10%, 5% and 1%, respectively.

Moving to the interaction terms included in the model to test the effect of listening to music on preferences, the interaction parameter between classical music and the status quo is negative, whereas the interaction parameter between jazz music and the status quo turns out to be positive. This means that with respect to the control group, the likelihood of choosing the status quo decreases if people are listening to classical music whereas it increases when listening to jazz music. However, the positive standard deviation coefficients indicate heterogeneity in our sample also for the influence of different genre of music. The random scale parameters also show the presence of scale heterogeneity across respondents, being both the scale coefficient (TauScale) and the weighting parameter (GammaMXL) positive and highly significant.

Table 3 shows the willingness to pay for each attribute and level. They are all positive, except for the variables capturing the status quo and the interaction effect of the different genres of music with the status quo. The value of the willingness to pay for various management measures reflect the order of preferences of the generalized mixed model. Visitors are more willing to pay for the restoration of the trails (EUR 5.7) than just for their maintenance (EUR 3.02), EUR 4.5 to protect the Yellow-bellied toad and around EUR 4 to have local organic food products available. They are less willing to pay for the biodiversity of the meadows. The negative willingness to pay for the status quo means that people need to be compensated if the local management measures are not implemented. This compensation decreases in the group that was listening to jazz music and increases in the group that was listening to classical music, with reference to the people

belonging to the control group. Thus, the music genres affect both preferences for local management measures and the amount of monetary compensations required when they are not implemented.

Table 3. WTP and Krisky–Robb confidence intervals (in EUR).

Attributes	Lower	Mean	Upper
BioM	0.97671	1.28704 ***	1.59736
BioH	2.89241	3.29965 ***	3.70688
Toad	4.48744	4.96794 ***	5.44845
Trail1	3.01892	3.48375 ***	3.94857
Trail2	5.70259	6.32997 ***	6.95734
Prod	3.96987	4.39452 ***	4.81916
SQ	−29.3372	−26.0380 ***	−22.7387
SQ Classical	−30.1261	−26.6227 ***	−23.1194
SQ Jazz	−28.1102	−24.8899 ***	21.6697

*** indicate significance levels at 1%.

Music and the different genres also have an effect on the time needed to complete the questionnaire and on the perception of time. People listening to jazz music filled in the questionnaire in less time on average relative to people listening to classical music and people in the control group. The perceived time was instead lower for people that were listening to classical music, and people in the jazz treatment perceived a longer time, also relative to the treatment with no music. Finally, one third of people considered jazz music as a disturbing factor, while only 12.5% of people stated that classical music was a disturbing factor.

5. Discussion

Our DCE evidenced that music affected individual choices for management options of ecosystem services. Classical music increased the likelihood to choose costly policy alternatives and jazz music increases the likelihood of choosing the status quo that does not require any payment for the entrance ticket. This leads to a different magnitude of compensation required by the respondents who prefer the status quo option. For the control group that listened classical music, we estimated an increase in the compensation required when the local management measures are not implemented equal to, on average, 3%. On the other hand, the listening of jazz music seems to reduce this compensation of an ammount equal, on average, to 4%. Thus, our estimates suggest that the effect of music genre on compensations is limited. However, this result should be further investigated to be confirmed. Finally, according to the results, music genre also influences the perceived time taken to fill out the questionnaire. Hypotheses H1a, H1b, H2 and H3 are therefore confirmed. The results of our study are coherent with the cited literature that evidenced the effect of music on behaviours and how, among music characteristics, different genres have an effect on consumer behaviours. This happens through the mediating role of emotions. In particular, classical music was shown to increase the time spent in a shop, sales volumes and the prices that consumers are willing to pay. People tend to spend more and select more expensive products [24–26,55]. Classical music also increases the positiveness of the reviews or the venue [24]. Moreover, classical music has been shown to be more associated to calm emotional states probably due to its calming virtues while jazz music with vitality states [27]. For this reason, we think that in our study respondents that listened to classical music have paid more attention in making trade-offs among attributes and levels. On the contrary, jazz music led people to answer more quickly to the questionnaire, paying less attention to make trade-offs. Moreover, the positive emotions induced by classical music led respondents to choose the costly alternative more rather than the status quo and vice-versa for the jazz music. This result confirms the marketing literature that evidenced more consumers spending with classical music. Positive emotions of people that were listening to classical music are confirmed from the fact that only 12.5% of people stated the

classical music was a disturbing factor. On the other hand, one third of people considered jazz music as a disturbing factor. Perceived time was also different, with people belonging to the classical music treatment perceiving less time spent filling the questionnaire than people belonging to the control group and the jazz group. This last group was indeed the group that perceived more time spent in completing the questionnaire. Hypotheses H3 is therefore accepted. These results confirm the findings of the previous literature that music has an effect on the perception of time [15].

These results are extremely useful, both for the user categories of researchers and policy makers. For the former category of users in particular, the empirical evidence produced demonstrating that the jazz music genre favours the use of heuristics in choice experiments and influences the respondents' time of response should be considered in the design and implementation of DCE. This is important to be sure that the method implementation actually follows the theoretical assumptions. Moreover, if elicited preferences depend on the context on which the survey is implemented, wrong information could be provided to decision markers if the choice context is altered by an uncontrolled external stimulus. This aspect is important for online surveys. People normally answer to an online survey inside their house or office, and the cited literature suggests that background sounds can have an effect on their answers. This study shows that the genre of music that people listen to has an effect on their stated choices and that this effect may lead to biased inferred preferences. Therefore, when conducting online survey, researchers should consider the existing of this biasing effect. They should therefore manage it through the use of protocols and guidelines that instruct respondents as to what they can or cannot listen when filling out the online questionnaire.

As it concerns the second category of users, results produced by this study should be considered in planning natural sites' management actions. In fact, the knowledge of the effect of music genre on people's preferences for nature could be used to encourage the conservation of ecosystem services. If classic music pushes people to protect natural resources, this genre of music should be used in educational and ecosystem services conservation campaigns. It can also played in visitor centres and virtual tours to encourage nature conservation and improve visitors' sensitiveness for the environment.

A first limitation of this study is that it compares two pieces of classical and jazz music, but in both genres, there are pieces with different structural properties that can affect people emotions in different ways. To limit this effect as much as possible, we have selected two instrumental pieces with a fast tempo, and pieces were played at the same volume for the entire time of the interview. A second limitation is that listening to music with headphones while filling in the questionnaire may have appeared artificial compared to natural field experiments in stores, bars or restaurants, where music is a quite common background. However, we think this aspect did not affect the results of our study since respondents accepted the idea of listening to music while completing the questionnaire.

6. Conclusions

Discrete Choice Experiments are widely used in the monetary valuation of ecosystem services for providing policy recommendations about the competitive use of natural resources. They are based on the assumptions of rationality and preference stability. However, a growing number of studies are showing that in DCE preferences are not stable but depend on the context of valuation (i.e., [13,19]), questioning their usefulness for policy makers.

This study tested the hypothesis of whether musical genre influences stated preferences for nature conservation and found a significant effect. This result raises the issue of context-dependent welfare measures. If preferences and willingness to pay depend on the context, wrong policy recommendations to decision makers will be communicated. The use of protocols and guidelines that instruct respondents about the ambient background when answering a questionnaire is therefore highly recommended. Moreover, specific genres of music should be used in educational and ecosystem services conservation campaigns to encourage the nature conservation and improve sensitiveness for the environment con-

sidering that, as proven by this study, music genre can affect both the preferences and the willingness to pay for local management practices.

Despite the apparent utility, these results should be in any case interpreted with care, and more research would be necessary to draw general conclusions. The empirical research on the effect of music is well developed in psychological, consumer behaviour and marketing literature, but stated preferences could also be affected in several different ways, as this study demonstrated. We therefore encourage further studies on this topic.

Author Contributions: Conceptualization, S.N.; methodology, S.N.; software, S.N.; validation, S.N. and M.D.S.; formal analysis, S.N.; investigation, S.N.; resources, S.N.; data curation, S.N.; writing—original draft preparation, S.N. and M.D.S.; writing—review and editing, S.N. and M.D.S.; visualization, S.N. and M.D.S.; supervision, S.N.; project administration, S.N.; funding acquisition, S.N. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the European project LIFE11/NAT/IT/000187 "TEN"—Trentino Ecological Network (D2 action).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: The authors wish to thank the coordinator of Monte Baldo Local Natural Park Manuela Francesconi and the interviewers.

Conflicts of Interest: The authors declare no conflict of interest.

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