

## Research Article

# The Effect of Stereotypical Music on the Customer Selection of Wine in an Online Environment

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## ABSTRACT

The digital transformation of marketing leads to new forms of interaction with consumers. It has been established and well known that auditory stimuli generally affect human behavior. However, in the field of sensory marketing, only limited attention has been paid to the role and effects of audition in online marketing. In this research, we will further explore how sound influences consumer product selection in a digitalized setting. We have designed and performed an experiment in which respondents in a webshop environment were asked to select a bottle of wine from two different countries while hearing stereotypical music samples representing one of these countries. Our conclusion: In an online setting, auditory stimuli strongly influence consumer selection. In the case of constructed preferences, this effect was considerably stronger compared to well-defined preferences. These insights can help to further develop the effective use of sound stimuli in new forms of sensory marketing, such as virtual reality and other digital experiences in the marketing and sales context.

## KEYWORDS

sensory marketing, auditory stimuli, consumer behavior, product selection, digital transformation

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## 1. Introduction

The digitalization of our societies leads to considerable changes in how we connect. This has a major impact on how industries work, and in particular on how companies interact with customers (Mazali, 2018). This digital era is an important driver of new strategies that companies can use to differentiate themselves and add meaningful value for their customers (Manzano et al., 2019). Not surprisingly, digital marketing is an evolved and matured academic discipline (Rana et al., 2020; Langan et al., 2019). Recent research points out that the relevance of digital marketing, (e.g., through social media) can provide effective, low-cost exposure for (small) brands (Zhang et al., 2021). Msallati (2021) reveals that there is a generation difference related to social media ads between Gen Xers and Zers, and the

phenomenon of influencers in online settings is a much-loved topic among many of us (Reinikainen et al., 2020; Martínez-López et al., 2020; Lou & Yuan, 2019). At the start of the social media era, these platforms focused mainly on visual aspects like photos and text; nowadays, other senses start to play an important role. This recent development also reached the field of marketing, where the importance of multisensory interaction is being widely acknowledged (Petit et al., 2019; Spence et al., 2019; Starostová, 2017; Wiedmann et al., 2018). Some even argue that there is currently a 'sensory explosion' (Hilton, 2015).

In general, we know that online sensory marketing has huge potential. We also know that audition, in particular, influences the consumer experience in offline marketing settings, and a handful of studies indicate

that, in online settings, the experiences of the consumer can also be influenced by sound (Petit et al., 2019). What has not been explored so far is how auditory stimuli in particular influence consumer choices in an online shopping environment. Considering the increasing importance of online consumer purchases – which since the COVID-19 pandemic could have created lasting consequences for advertising (Alkassabeh, 2020; Mouratidis & Papagiannakis, 2021)– this is an important piece of the puzzle that must be solved. In our research, we explored the connection between wine and audition in an online setting, to enrich current knowledge on multisensory marketing.

## 2. Literature review

### 2.1. Online sensory marketing and audition

Digitalization has a significant effect on how we study consumer behavior (Stephen, 2016). Consumer behavior, famously defined by Hoyer et al. (2016), is the totality of consumer decisions regarding the acquisition, consumption, and disposition of a product. One way to influence consumer behavior is through sensory marketing. Sensory marketing, also known as sensory advertising, tries to appeal to the consumer's senses (sensory appeal) to affect their behavior. Sensation and perception are two distinct stages of processing the senses. Sensation is processing the stimulus, while perception is the understanding or awareness of sensory information (Krishna, 2012). For a long time, sensory marketing was neglected in marketing literature. As pointed out before, of the five senses – smell, audition, taste, touch, and vision – vision dominated marketing practices (Hultén et al., 2009). However, more recently, all five senses are gaining increasing attention (Podoshen, 2005). This is mainly because sensory marketing can potentially overcome the shortcomings of mass advertising (Joachimsthaler & Aaker, 1997), triggering individual brain functions that will contribute to establishing a more personalized relation between companies and consumers (Hultén et al., 2009). After all, triggering individual (psychological) characteristics leads to more effective persuasion compared to generalized mass communication (Matz et al., 2017).

### 2.2. Online sensory marketing

Although the similarities between online and offline marketing are legion, research suggests that the most significant inhibitors of online shopping are the absence of pleasurable experiences, social interaction, and personal consultation (Barlow et al., 2004). Sensory marketing can be used to add a new layer to the online customer experience that can help overcome this gap, for example, by influencing emotional factors (Doucé & Adams, 2020). These emotional factors drive the buying behavior of consumers, in some cases, even more than rational factors do (Chukwu et al., 2019). While sensory marketing is typically used in offline situations, multiple studies have proven that sensory marketing can also be effective in an online environment. However – and perhaps not surprising – most of these studies are focussed exclusively on vision (Petit et al., 2019). For example, the favourability of a website is determined by visuals on the website (Ageeva et al., 2018). Also, the look and feel of a website can be determined by color, which influences buying behavior (Goi, 2012). Interesting research can be found that discusses the role of taste, smell (Rodríguez, 2020), and touch (Rathee & Rajain, 2019) in online sensory marketing. An example is of a device that uses taste and smell is Vocktail. Vocktail is an augmented reality technology that augments the experience of drinking water through the electrical stimulation of taste buds and the manipulation of smell and color (Kerruish, 2019). Further, it is already possible to send a smell via a device connected to your phone so that a smell can be experienced in an online environment (Petit et al., 2015). However, these are perhaps not the first senses you would think of when applied in an online environment (Petit et al., 2019). Audition may have serious potential (Krishna, 2012; Krishna & Schwarz, 2014; Scott, 2021) but is overlooked in this context.

### 2.3. Audition and marketing

Several studies have already been done on the topic of audition in offline marketing contexts. Various relations are explored between audition and the behavior of the consumer. As to sound in general, music can influence the consumer's perception, judgments, and purchasing behavior in various ways (Spence et al.,

2019). It can also be established that sounds associated with products can help facilitate the consumer's visual search for certain products (Knoeferle et al., 2016) or alter the consumer's perception of a product (Spence & Zampini, 2006). Milliman (1982) already suggested that there is a relationship between the tempo of music and the time a consumer spends in a store. Consumers will move faster when they hear fast music during their visits to a store. In another study, Milliman (1986) indicated that there is a relationship between hearing slow-tempo music and the willingness of consumers to spend more money. Other research provided evidence that background music can influence actual sales. Areni and Kim (1993) found that consumers are willing to buy more expensive wine when exposed to classical music. They concluded that the lifestyle associated with classical music fits the behavior of buying expensive wine. Further research shows that background music may change how consumers perceive a store. A notable example is that music may distract from a salesperson's pitch (Chebat et al., 2001). Another study shows that background music can help recognize the advertisement of a brand when consumers hear music associated with a special product or brand (Kellaris et al., 1993). More recent research shows that adding auditory confirmation leads to more trust in technology interfaces (e.g., self-checkout kiosks) (Reynolds-Mcilnay & Morrin, 2019). Furthermore, research performed during multisensory experiential tasting events indicates that music can modify the wine-drinking experience, and – if music is congruent with the wine taste – can have a significant effect on the perceived acidity and fruitiness of the wines (Wang & Spence, 2015).

#### 2.4. An unexplored field: Online sensory marketing through audition

Only a handful of studies have been done on audition in the context of online sensory marketing (Petit et al., 2019). We know, in general, that sensory marketing through audition adds a new layer to the online consumer experience and influences online consumer behavior (Erenkol & Merve, 2015; Afacan-Seref et al., 2018). For example, sound feedback from material products during a virtual trial increases the willingness to pay (Ho et al., 2013), and high-frequency sounds

redirect visual attention towards light-colored objects (and low-frequency sounds towards dark-colored objects), which can be used to guide consumer attention in commercials (Hagtvedt & Brasel, 2016). Furthermore, it has been found that playing music online can have two functions: It can serve to enrich product information, and it can provide a background atmosphere (Fiore & Kelly, 2007). Research by Danner et al. (2017) shows, for example, that describing a wine by means of sound leads to higher liking ratings and the elicitation of more intense positive and less intense negative emotions. An interesting study exploring the effect of music was done by Guéguen and Jacob (2014). They found that the type of music played as background music during a visit to a website may influence the consumer's choice: Participants were exposed to background music (or not) while they were browsing the website of a seaside resort. It was established that djembe music was associated with a choice of an outdoor accommodation, while jazz music was associated with a hotel reservation. In both cases, this led to significant differences compared to the situation in which no background music was played.

### 3. Hypotheses

The above literature findings form the foundation of our research design: to investigate the extent to which stereotypical music influences consumer choices in an online shopping environment. Stereotypical music in this study is defined as an unrefined socially constructed association with music that originates from a specific country, in this case, France or Germany (Susino & Schubert, 2019). Stereotypical music activates related knowledge structures concerning the subject, which causes certain sections in the brain to get primed (North et al., 1999). For example, when customers hear French music, they may think that they like French wine and choose French wine. It has been proven that all five senses can be triggered in an online environment (Petit et al., 2019). It is also expected that not everyone is equally influenced by music. This is because consumers with well-defined preferences in their memory will not easily deviate from this preference (Bettman et al., 1998). As it is expected

that consumers without well-defined preferences will unconsciously base their choice on the stereotypical background music, they will make a choice based on their memory (March, 1978; Gottwald & Braun, 2019). Therefore, we anticipate that consumers without those preferences will be influenced by the music more often than will consumers with well-defined preferences. This leads to the following hypotheses:

H1: Stereotypical music positively influences the wine choice of consumers in a webshop environment.

H2: Consumers with well-defined wine preferences will be significantly less influenced by the music when making a product choice and vice versa.

#### 4. The context of the experiment

In this study, we will investigate the relation between music and wine choice in an online environment. We also included the variables 'preferred country' and 'preferred wine'. In our experiment, we used a paper by North et al. (1999) as a starting point. The study investigated the extent to which stereotypical French and German music could influence supermarket customers' choices regarding French and German wines in an offline environment. The results showed that French music led to French wines outselling German ones. The effect also proved to work both ways: when German music was played, German wines outsold French wines. The relationship between preferred wine (French versus German) and French and German music conditions led to a non-significant value in their study.

##### 4.1. Participants

Participants were native Dutch speakers from the Netherlands, selected online by non-probability sampling. In total, 417 participants were randomly divided between the two conditions: French background music ( $n=200$ , 60 males, aged 18-71 years, mean=33.86, SD=15.029) versus German background music ( $n=186$ , 63 males, aged 18-73 years, mean=31.32, SD=14.644). In total, 31 respondents were excluded from further analyses due to uncompleted data, no use of sound during the experiment, or a mismatch with the target group (18+). This leads to a sample of  $n=386$ .

##### 4.2. Materials

By creating a supermarket webshop, we were able to investigate relationships in an online world. The wines were all offered for a reasonable price, varied by type of wine (€9.99 for rosé wine, €12.49 for red wine, and €9.99 for white wine). We played traditional French and German music. For French music, 'Une belle histoire' by Michel Fugain was played and for German music, 'Du' by Peter Maffay was selected. 'Une belle histoire' and 'Du' are well-known evergreens in the country in which the experiment was performed (the Netherlands) and are therefore familiar to the target group. Even participants who were not familiar with these songs could recognize the origin of the song by the French and German languages, both well-known languages and widely offered high school subjects in the Netherlands. A small pilot study ( $n=11$ ) established that these two pieces of music hold good face validity.

##### 4.3. Design and procedure

Our experiment is a 'lab-in-the-field' experiment, which combines elements of a lab in a natural setting (Duflo & Banerjee, 2017, pp. 439-461). This design choice aims to improve the generalizability of this study while controlling the experiment to ensure internal validity. The designed webshop had the look and feel of a real online supermarket and participants were able to perform this study in their own natural environment.

As figure 1 shows, participants were randomly assigned to one of the two conditions (French background music or German background music) during the experiment. Three types of wine (white, red, and rosé) were altered. Each wine was labeled with a country of origin (French vs. German) and the level of alcohol was presented (low versus high). Additional information, such as bottle content (75 cl) and type of wine (Chardonnay, Merlot, and Rosé), was also included in this study (Figure 1). French bottles were placed on the left side of the webshop for half of the days and the German bottles on the right and vice versa. This was done to minimize the effect of external factors on making choices. Participants had to shop in different demarked categories of the webshop and were asked to select one out of three products

each time. The participants were asked to do this nine times. This resulted in a shopping bag filled with three chocolate bars, one yoghurt product, one bottle of craft beer, one hunk of cheese, and three wines (white, red, and rosé). This was done to minimize the chance of participants choosing a wine by coincidence or out of habit. Several national flags were added to the display to indicate each product's country of origin. Products from other countries, besides France and Germany, were also used to disguise the purpose of the experiment. The flags represented the following countries: Belgium, Poland, Greece, France, Germany, Switzerland, Bulgaria, and The Netherlands.

The most important factors for choosing wine during the decision-making process are quality, price, grape variety, wine style, and region of origin (Mccutcheon et al., 2009). The influence of the factors of price and country of origin has also been demonstrated in an online environment (Santos & Ribeiro, 2012). To minimize the external factors, all wines were given the same label, which referred to the grape type (white wine, red wine, or rosé wine), which we will refer to as type of wine. It was also ensured that the price of German and French wine matched, as did the alcohol percentage. The country name varied (French or German), but the other factors were kept constant. Variables were controlled and held constant as much as possible so that we can assume that these results are due to the background music.

During the experiment, typical French and German music was played. We took into account that most consumers do not have their sound turned on during online shopping. Two actions had to be taken to ensure consumers would turn on the sound of their device. Before participants could start their online shopping journey, they were asked to answer the following question: 'Which animal do you hear?' Consumers had to turn on the sound to be able to answer the question. Second, the instructions of the experiment were given as a sound clip. After the auditory instruction, the sound automatically changed to French or German background music. After the products were selected, a fictitious payment was made, and the participants were referred to a survey in which additional ques-

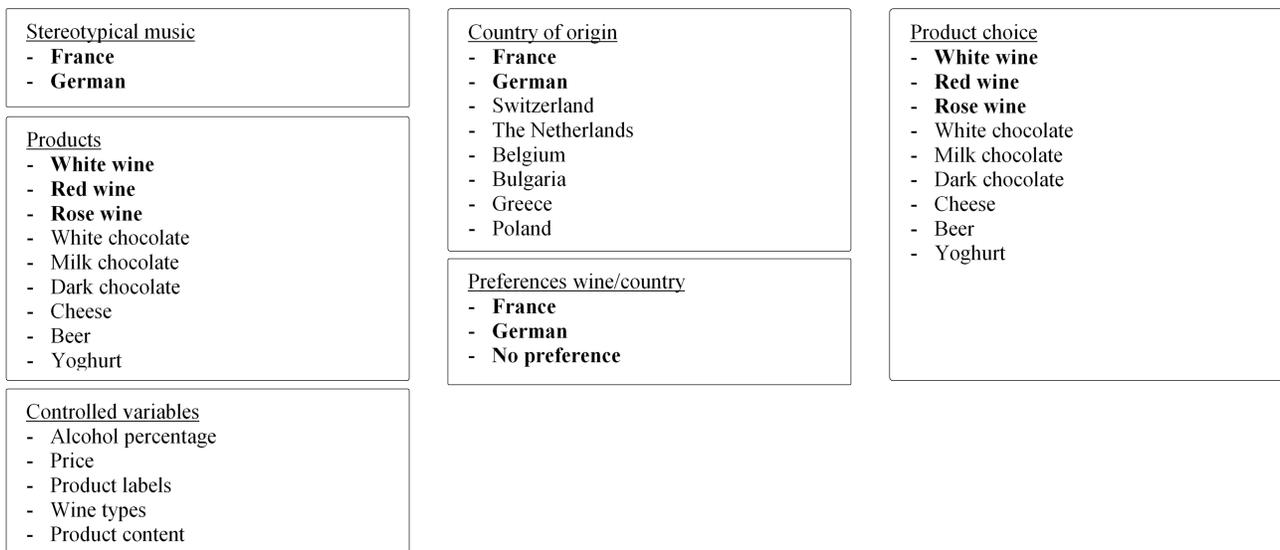
tions were asked. We asked respondents about their country preference (France, Germany, or I do not have a preference) and if they preferred French or German wine (French wine, German wine, I do not have a preference). This was done after the observation; otherwise, consumers could determine the purpose of the experiment, which would bias the results. Finally, respondents were asked questions related to the music, like 'Was your sound turned on during the experiment?', 'Did you hear music during online shopping?', and 'How did you feel about the music?' The questionnaire ended with general background questions about ages, gender, and level of education.

We conducted the online experiment via the webpage [theshopbuilders.com](http://theshopbuilders.com). Testing was carried out 24/7 so that respondents were free to enter the webshop at any time between April 16 and April 30, 2020. The two-week testing period was not close to any major public holidays. However, the results may have been affected by the COVID-19 pandemic, as the dates indicate.

## 5. Results

To check the main relationship (stereotypical music x product selection of different types of wine), a chi-square test was conducted for each type of wine (white wine, red wine, and rosé wine). The results of these analyses were significant  $p < 0.05$  ( $N = 386$ ) (red wine:  $\chi^2 = 52.593$ ,  $p < 0.05$ . White wine:  $\chi^2 = 31.015$ ,  $p < 0.05$ . Rosé wine:  $\chi^2 = 30.387$ ,  $p < 0.05$ ). Using Cramer's V analysis, significant moderate strength relationships between the stereotypical music and the selection of different types of wine were demonstrated ( $p < 0.000$ ) (Cramer's V red wine: 0.369. Cramer's V white wine: 0.283. Cramer's V rosé wine: 0.281). This means that when stereotypical French music was played, more French wine bottles were sold. When stereotypical German music was played, more bottles of German wine were sold. This applied to all types of wine. The results indicate a clear connection between stereotypical music and the wine choice of consumers (see Table 1).

Furthermore, we conducted logistic regressions to find out whether the variables of wine preference and



**Figure 1.** Visual of variables included

**Table 1.** Bottles of wine sold per music condition

Wine type	Red wine	German	Stereotypical music	
			German	French
		German	84	24
		French	102	176
	White wine	German	102	54
		French	84	146
	Rose wine	German	94	47
		French	92	153

country preference have a moderating effect on the main effect (stereotypical music x product selection of different types of wine). The logistic regressions are chosen because of the nominal dependent variable used in the study. We created new variables by matching preferences with the independent variable music. This was done for both moderating variables: wine preference and country preference. When the music and preference matched, the value was coded as 1 (when a participant heard French music and had French preferences and, likewise, when a participant heard German music and had German preferences). When there was no match between the music and the preferences, or when a participant had no preference at all, the value

was coded as 0 (for example, a participant heard German music but had French preferences). By matching music and country, and wine preferences, it becomes clear whether preferences have a moderating effect on the relation between music and product choice.

To assess the fit of our logistic model, the Hosmer and Lemeshow test provides useful insights. This test shows significant results for all types of wine (white wine, red wine, and rosé wine) ( $p=1.000$ ,  $\chi^2=0.000$ ). The fact that the p-value in all cases is above 0.05 indicates an acceptable model fit. Also, the omnibus tests of model coefficients confirm the use of this logistic model, which shows the improvement of the model ( $p<0.01$ ). The predictive power of this study, indicated by the intuitive value of Nagelkerke R-square, is relatively low. The Nagelkerke R-square values vary between 0.122 and 0.371. This method is chosen because it is intuitive to read, as it runs from 0 to 1.

### 5.1. Wine preferences

A more detailed overview of the data can be found in Table 2. The Wald score combined with the significant levels reveals the effects of the independent variable (stereotypical music) moderated by wine preference, on the dependent variable (wine choice). Regard-

**Table 2.** Result logistic regression for wine preferences

	Red wine				White wine				Rose wine			
	B	Wald	Sig.	Exp (B)	B	Wald	Sig.	Exp (B)	B	Wald	Sig.	Exp (B)
Music	24.65	0.00	1.00	5.10	3.97	25.26	0.00	52.89	3.85	23.92	0.00	46.75
Fits wine preferences	2.53	19.58	0.00	12.60	1.89	29.21	0.00	6.56	1.24	12.87	0.00	3.45
Music x fits wine preferences	-	9220.90	1.00	0.00	-	22.59	0.00	0.02	-	17.80	0.00	0.03
Constant	-3.45	0.51	0.00	0.03	-	51.83	0.00	0.16	-	49.18	0.00	0.18
					1.83				1.71			

ing the variable ‘wine preferences’, Table 2 shows significant results ( $p < 0.01$ ). The interaction effect (music x wine preference) is found to be significant 2 out of 3 times for white wine and rosé wine (red wine,  $p = 0.998$ ; white wine,  $p = 0.000$ ; rosé wine,  $p = 0.000$ ). This data indicates that H2 is supported; likely, consumers with well-defined wine preferences were less influenced by the stereotypical music.

### 5.2. Country preferences

Besides investigating the moderating variable ‘wine preference’, we were interested in knowing the extent to which country preference could have a moderating effect on the relationship between music and product choice. Table 3 shows that ‘country preferences’ were significant for red wine ( $p = 0.009$ ) and white wine ( $p = 0.019$ ). However, the results for rosé wine led to a non-significant  $p$ -value ( $p = 0.122$ ). The interaction effect (music x country preference) is found to be significant in all cases (red wine,  $p = 0.000$ ; white wine,  $p = 0.000$ ; rosé wine,  $p = 0.024$ ). These results support H2; consumers with well-defined country preferences seem to be less influenced by stereotypical music.

## 6. Conclusion and discussion

### 6.1. Brief summary of findings

The results of the experiment confirm that stereotypical music positively influences the wine choice of consumers in a webshop environment. For all types of wine (red, white, and rosé), there was a significant relationship between the music that was played and the wines that the respondents selected. Our findings also confirm that consumers with well-defined wine preferences will be significantly less influenced by music when

making a product choice and vice versa. Wine preferences and country preferences influence the relationship between music and wine selection. Consumers with well-defined preferences were less influenced by the stereotypical music.

### 6.2. Theoretical implications

Theoretically, this research extends sensory research in the field of online marketing. We can conclude that the exposure to stereotypical music representing a country while browsing a webshop influences the consumer’s choice between wines from different countries of origin. More specifically, our main contribution lies in the fact that we established two relationships in the context of online sensory marketing and audition. First, auditory stimuli (stereotypical music) strongly influence consumer selection while one is browsing a webshop. Second, this relationship can also be observed in the case of well-defined consumer preferences, although not as convincingly compared to the situation without such preferences. Both ‘country preference’ and ‘wine preference’ have demonstrated this relationship. This means that auditory stimuli in general, but more specifically music, can be used to influence consumer behavior in online marketing. While this was already quite firmly established in offline settings, research in online environments is far behind.

### 6.3. Practical implications

The findings of this research offer practical insights regarding sensory marketing. The use of additional senses via digital marketing, like audition, can help create an online atmosphere. Our research indicates that online marketing and audition can be more struc-

**Table 3.** Result logistic regression for country preference

	Red wine				White wine				Rose wine			
	B	Wald	Sig.	Exp (B)	B	Wald	Sig.	Exp (B)	B	Wald	Sig.	Exp (B)
Music	4.07	33.73	0.00	58.27	3.04	31.80	0.00	20.90	2.10	20.15	0.00	8.13
Fits country preferences	1.67	6.91	0.01	5.32	0.83	5.55	0.02	2.29	0.56	5.09	0.12	1.74
Music x fits country preferences	-	14.79	0.00	0.05	-	15.91	0.00	0.09	-	2.39	0.02	0.30
	2.92				2.37				1.21			
Constant	-	30.15	0.00	0.04	-	27.15	0.00	0.22	-	27.15	0.00	0.22
	3.23				1.54				1.54			

turally integrated to achieve better results. Integrating audio features can be used to increase the information richness of customers and to decrease the void between customer perception (of a webshop) and the message that the retailer is trying to get across. This is done by supporting customers in making a decision regarding their purchase (Fiore & Kelly, 2007). Online events or apps can benefit from these insights and add audition as an extrasensory aspect, creating a more comprehensive experience for their customers (Spence et al., 2019; Carvalho et al., 2015).

At the managerial level, this means that online marketing strategies should not overly focus on one-sided stimuli. Also, designers of online marketing applications should be encouraged to experiment with sound to reduce the possible inhibiting effect of online shopping experiences compared to offline experiences. It is recommended to not consider sound as a nice (but not crucial) addition to existing webshop designs but, rather, to fully integrate sound as a serious part of the design of online shop applications.

### 7. Limitations and further research

Although this research found strong effects of audition on online shopping, there are limitations regarding this study. First, the study is limited to a specific product category (wine) with specific countries (France versus Germany). We assume similar results for other high-involvement products and other countries but these effects were not studied during this research. Future research could also include a 'no music' control variable to further assess the influence of audition on shop-

ping behavior. Second, the results clearly point to a relationship between auditory stimuli and consumer selection. The moderating effects of both wine preference as well as country preference prove to exist. The matter of matching in this study is a critical issue. The moderating variable is matched with the independent variable to examine the interaction effect in a specific order, namely, a fit between music and preferences and vice versa. The result of creating these new matching variables is the fact that music is included twice in the measurements.

The COVID-19 pandemic triggered an unprecedented urge to explore online alternatives to offline settings, including in the marketing profession. In the near future, we expect an increase in the use of new technology to capture consumer preferences and nudge the behavior of consumers for marketing purposes. Among them are virtual and augmented reality experiences and more interactive online product testing. Also, beyond the scope of marketing, the potential of using virtual and augmented reality applications to improve test user preferences for new products and services is now widely explored in the field of product design, for example, in the context of value-sensitive design (Vernaart, 2021). The potential of using sound to maximize the full experience of different designs is worth exploring further. It is therefore important to take audition more seriously in online settings – to not limit research to stimuli that relate only to vision but, instead, to explore the full capacity of using stimuli that relate to all senses. In other words: Make more sound!

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## Conflict of interest

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LUMINOUS  
INSIGHTS

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