

SOUND LEVEL OF BACKGROUND MUSIC AND ALCOHOL
CONSUMPTION: AN EMPIRICAL EVALUATION¹

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Summary.—The effect of background music on alcohol consumption has been widely researched in the literature, but few studies have tested the effect of sound level on drinking behavior. An experiment was carried out in two bars to test patrons' response to music's loudness. Using random assignment, patrons were exposed to a sound level which was higher than that usually employed in the bars in which the study took place. Analysis showed that a higher sound level than usual was associated with consuming more drinks. An "arousal" hypothesis is used to explain the findings.

Background music is known to affect behavior and particularly consumers' behavior. Numerous experimental studies in natural settings have indicated that different background music and structural components of the music (e.g., sound level, tempo, tonality) are associated with consumers' behavior. An early experiment on effect of structural components of background music was conducted by Smith and Curnow (1966), who varied the sound level of music played in two supermarkets. They found that customers spent significantly less time in the markets during the loud session than during the soft sessions, but no significant difference in sales between the two sessions was found. When Milliman (1982) examined the effect of the tempo of background music in a supermarket a slow music tempo (60–73 beats/minute) compared to a fast tempo (93–110 beats/minute) decreased the in-store traffic flow but increased sales volumes. Milliman (1986) in another evaluation of music tempo on the behavior of restaurant patrons found that a slower music tempo led to an increase in customer's length of stay and also an increase in the average dollar amount of bar charges per customer. These findings were recently supported by Caldwell and Hibbert (1999) who found that slow music tempo increased money spent on both food and drink at a restaurant.

Structural components of music are not the only factors which may influence customers' behavior. Several studies have shown that the style of

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background music played is important. Areni and Kim (1993), by comparing classical versus top-forty pieces as background music in a wine store, reported the classical music increased the amount of sales and led the customers to select more expensive merchandise. This finding is consistent with the suggestion of Yalch and Spangenberg (1993b) that classical music evokes a perception of higher priced store merchandise and supports the notion that music must be appropriate for the context in which it is employed to enhance persuasion. The notion of association between music and context had been recently supported by an empirical evaluation conducted by North, Hargreaves, and McKendrick (1999). They found that customers' selection of French and German wines was strongly associated with use of stereotypic French and German background music played in the store. French music increased the sales of French wines compared to German ones, whereas German music led to the reverse effect. In both cases, the differences between the sales of French and German wines were significant.

An aspect of the structural components of music that has been studied less with respect to customers' behavior is the sound level. The experiment of Smith and Curnow (1966) mentioned above is an exception as these authors reported high sound level decreased the time spent by the customers. They explained their results as a function of arousal. The high sound level increased arousal of customers which they expressed in enhancement of their behavioral response toward the stimulus. High tempo was assumed to have the same property of enhancing arousal and so also enhanced the behavioral response of these perceivers. McElrea and Standing (1992) found that fast music significantly decreased the amount of time spent drinking. Similarly, Roballey, McGreevy, Rongo, Schwantes, Steger, Winiger, and Gardner (1985) found that, when patrons in a cafeteria were exposed to fast tempo music, a significant increase in the number of bites per minute was observed compared to a slow tempo or to a no-music condition. Again, these results were explained by drawing on the notion of high "arousal" induced by high tempo music.

The purpose of the present experiment was to examine the effect of the sound level of background music on drinking behavior in a natural setting. Because it seems that a high sound level could elicit higher arousal, we hypothesized that with a high sound level relative to moderate sound level customer should drink more.

There appear to be possible applications of these findings. While it might be financially advantageous for a bar or café manager to use high sound levels to increase patrons' alcohol consumption, any application must be used with caution because the present sample was small, and the number of drinks ordered was the only dependent variable measured in our experiment. It is possible the high sound level was associated with perceptions

more negatively of the bar which might lower the probability of returning. The customer's evaluation of the bar would be an interesting variable for researchers to address.

METHOD

Participants

The participants were 120 patrons (60 men and 60 women) who unknowingly participated in the study and were observed at random in two bars, one located in a rural zone and one in an urban zone. Each observation was made at a table at which two participants were seated. The limitation to pair participants was used because pairs were more common and patrons who were alone were few as that would have required a longer time to obtain a sufficient sample. Tables with more than two participants led to some difficulties in gathering correct information.

Procedure

The observations were made during two Saturday nights with the consent of the owners of the bars. Two observers situated in two different places in the bars in which the experiment took place were used. Before selecting a participant, the sound level of the background music was manipulated according to a randomization procedure. When the level of background music had been selected, observations were conducted until the last participants left the bar. Then a new random selection of the sound level was made, and new participants were selected among patrons who entered the bar. The background music played in the two bars was the same as the music usually played there (Top-40 music in both bars). In the control condition the sound level used was the same as that on usual days (72 dB in the rural bar and 75 dB in the urban bar). In the higher level condition the background music was played at a level of 88 dB in the rural bar and 91 dB in the urban bar. Sound levels were measured by a decibel meter placed near the center of the room. The high level was selected according to the previous work of Kellaris and Altesch (1992), who found that 90 dB was a level considered by subjective evaluation as a typical level of "foreground music." This level was also considered by the owners of the bars as the maximum level they could use. So it was decided to take 72–75 dB as the typical level ordinarily used in the bars in which the experiment was carried out, whereas 88–91 dB was considered a higher level.

After selecting the sound level, the observers waited for the patrons who first entered the bar. If the patrons were in a pair, they were selected as participants. If the patrons were alone or were in a group of more than two people, observers waited until a pair of patrons entered. The observers were instructed to observe discretely the pair of participants and to count the

drinks ordered until they left the bar. After the participants had left, the two observers compared their measures, and an evaluation was made. Comparison between the two observers showed high consensus between their observations ($r = .97$).

RESULTS

The dependent variable was the number of drinks ordered by each patron observed. The results obtained in the different conditions are presented in Table 1.

TABLE 1
MEANS AND STANDARD DEVIATIONS OF DRINKS ORDERED BY RURAL OR URBAN SITE, SEX OF PATRONS, AND LOUDNESS OF MUSIC

	Rural Site				Urban Site			
	High (88 dB)		Usual (72 dB)		High (91 dB)		Usual (75 dB)	
	Men	Women	Men	Women	Men	Women	Men	Women
<i>M</i>	5.3	3.2	3.9	2.3	4.3	2.1	2.9	1.5
<i>SD</i>	0.9	0.8	1.1	0.6	0.9	0.6	1.0	0.5
<i>n</i>	15	15	15	15	15	15	15	15

A 2 site (rural, urban) \times 2 patrons (male, female) \times 2 sound level (high, usual) analysis of variance was used to analyze the data. A main effect of sound level was observed ($F_{1,119} = 53.68$, $p < .001$, $\eta^2 = .41$). With a high sound level patrons ordered more drinks ($M = 3.7$) than with the sound level employed usually ($M = 2.6$). A main effect of patrons' sex was found ($F_{1,119} = 149.12$, $p < .001$, $\eta^2 = .15$) which indicated that male patrons ordered significantly more drinks ($M = 4.1$) than female patrons ($M = 2.3$). A main effect of region was also observed ($F_{1,119} = 41.46$, $p < .001$, $\eta^2 = .11$). Patrons in the rural bar ordered more drinks ($M = 3.7$) than patrons in the urban bar ($M = 2.7$). The analysis among the three variables showed no interactions between the conditions.

DISCUSSION

Our hypothesis was supported by the results. When sound level was high this led to an increase in consumers' drinking. Males drank more than did females, and subjects in the rural area drank more than subjects in the urban area. These two patterns of results are congruent with the statistics on alcohol consumption in France (Mermet, 2000).

The positive effect of the structural component of music on customers' behavior is consistent with previous studies in natural settings (Smith & Curnow, 1966; Milliman, 1982, 1986; Caldwell & Hibbert, 1999). In each of these cases, the arousal properties of high sound level were assumed to be associated with patrons consuming more drinks. Again, these findings are con-

gruent with previous studies. Roballey, *et al.* (1985) found that patrons exposed to fast music increased the number of bites per minute. Similarly, McElrea and Standing (1992) found that fast music significantly decreased the time used in which subjects drank a soda. Such results could also explain our findings. Following the arousal interpretation in the present experiment, the high sound level led to higher arousal, which is inferred to stimulate persons to drink faster and to order more drinks. To test this assumption, research should use the drinking time per drink as the dependent measure with the same procedure. It is also necessary to measure arousal because, in our experiment, arousal is only an inferred possible explanation and requires evaluations by subjects or some other external measure.

Other factors' evaluation could be necessary. Yalch and Spangenberg (1993a) have found an interaction between music preferences and perceived shopping time in a department store. Perhaps the mediating effect of music volume on behavior may be understood as music preference, not arousal. So it would be interesting to evaluate music preference by various sound levels. Researchers should test this inference and include other control measures to explain the effect of sound level on drinking behavior.

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