Play That One Again: the Effect of Music Tempo on Consumer Behaviour in a Restaurant

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[to cite]:


European Advances in Consumer Research Volume 4, 1999 Pages 58-62

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The paper reports research into the effects of music tempo on consumer behaviour. A field experiment involving consumers dining at a restaurant was carried out to investigate the extent to which music tempo influences actual and perceived time spent dining and the amount of money spent. The results show that when slow music is playing, customers spend a significantly greater amount of time dining than when fast music is playing. There was some evidence that perceptions of time spent dining were influenced by the music, but not to a significant level. Finally, the music tempo was found to have a significant effect on money spent on both food and drink at the restaurant.

INTRODUCTION

Service providers have shown growing interest in atmospherics as a means of enhancing the appeal of service environments and influencing consumer behaviour in service settings. Academic interest in this area has grown following Kotler's (1972/3) article emphasising the importance of atmospherics in the field of marketing and, moreso, since Donovan and Rossiter's (1982) application of Mehrabian and Russel's (1974) model of environmental psychology to the retail context.

The research reported in this paper focuses on music as an element of the service environment. The influence of music on consumer
behaviour within service environments has been studied by a variety of scholars (Milliman, 1982; 1986; Yalch and Spangenberg, 1990; North and Hargreaves, 1996). Understanding of the effects of music is particularly useful to service managers, as this element of the environment is relatively inexpensive and easy to control. Specifically, the paper examines the effects of music tempo on perceived and actual time spent in a restaurant and the amount of money spent.

LITERATURE REVIEW AND HYPOTHESES

Atmospherics and Environmental Psychology

The influence of atmospherics in marketing contexts is based on the premise that the design of an environment through a variety of means, including lighting, layout, sounds, colours and temperature could stimulate perceptual and emotional responses in consumers and affect their behaviour (Kotler, 1972/3).

Tai and Fung (1997) distinguish two main streams of literature that have emerged within the body of literature on atmospherics in service settings. On one hand are those studies that treat the service atmosphere as a holistic concept, focusing on the combined effects of various elements of the environment on consumer behaviour (McGoldrick and Pieros, 1995; Donovan and Rossiter, 1982). On the other hand are studies that focus on specific atmospheric elements such as colour (Bellizzi et al., 1983), lighting (Areni and Kim, 1994), scent (Gulas and Block, 1995) and music (Yalch and Sprangenberg, 1990; Milliman, 1982).

A dominant model adopted to develop understanding of how the service environment affects consumer behaviour is the Mehrabian and Russel (1974) model of environmental psychology (Baker and Grewel, 1992; Foxall, 1997; Kenhove and Desrumaux, 1997; Tai and Fung, 1997). This model adopts the stimulus-organism-response (S-O-R) paradigm and proposes that perceptions of stimuli in the environment (S) lead to emotional responses in individuals (O) which, in turn, produce approach-avoidance behaviour (R). Although this model is widely accepted as a valid explanation of the processes underlying individuals' responses to built environments, other explanations have been offered. For example, East (1997) advances the idea that the effects of service environments on consumer behaviour are not necessarily mediated by emotional states. Instead, it may be that service atmospherics directly stimulate behaviour and that emotional responses are incidental and not part of the causal sequence affecting behaviour.

The Role of Music

The amount of literature on the effects of music on consumer behaviour is relatively limited but has steadily grown over the last two decades. Bruner II (1990) provides a review of the literature up to the beginning of the 1990s and continued interest in the topic is demonstrated by more recent work by authors such as North and Hargreaves (1996a,b, c), Areni and Kim (1993) and Kellaris and Altsech (1992).

The two main domains in which the effects of music have been explored are advertising (Tom, 1990; Alpert and Alpert, 1989; Gorn, 1982) and service environments (Areni and Kim, 1993; Yalch and Spangenberg, 1990; Milliman, 1986; 1982). Of the research that focuses on service environments, the majority has investigated the effects of music in retail stores or shopping malls. To the authors' knowledge, only Milliman (1986) and North and Hargreaves (1996a, b) have considered alternative service settings, which in these cases were restaurants and cafeterias. It was, therefore, decided that the present research would build on these latter studies, further exploring the effects of music in the context of a restaurant.

Bruner II (1990) notes that "Music is not a generic sonic mass, but rather a complex chemistry of controllable elements" (p 95). Music can vary along various dimensions including timbre (the texture of the music, which incorporates volume), rhythm (the pattern of accents given
to notes) and tempo (the speed or rate at which the rhythm progresses). The effect of music on behaviour has been suggested to operate via its effect on cognitive and emotional processes (Seidman, 1981). Much of the research that has considered the effects of music on individuals’ emotional states draws on Berlyn's (1971) arousal hypothesis that preference, and thus pleasure for aesthetic stimuli such as music, is related to the arousal potential of the stimuli. Highly arousing music is defined as loud, erratic and difficult to predict with a quick tempo, while music with low arousal qualities is soft, monotonous, very predictable and with a slow tempo (Berlyn, 1971).

One of the more consistent findings of research into the effects of particular components of music on behaviour is that music that is more arousing leads to individuals spending less time on activities. Smith and Cunrow (1966) revealed that when loud music was played in a supermarket customers spent less time shopping and Milliman (1982) demonstrated that music tempo affects the speed with which consumers moved around a store. Milliman (1986) later showed that the tempo of music in a restaurant affected the time that people spent in the restaurant, such that individuals dining under the fast music condition spent less time at their tables than individuals dining under the slow tempo condition. Similar evidence of the effects of music tempo includes research by Robaley et al. (1985) who found that it affected the number of bites taken per minute in a university cafeteria and McElrea and Standing (1992) who recorded that music tempo influenced the speed with which drinks were consumed at a bar. The first hypothesis for this research is therefore:

H1: Music tempo will affect actual time spent in the restaurant such that individuals dining under the slow tempo condition will spend more time in the restaurant than individuals dining under the fast tempo condition.

Although there are now several studies that have examined the effects of music on actual time spent in stores (Milliman, 1982; Smith and Cunrow, 1966) and restaurants (Milliman, 1986), little research has investigated the effects of music on consumer time perceptions. Kellaris and Kent (1991) illustrated that individuals judged the duration of fast tempo music to be longer than slow tempo music. Similarly, Kellaris and Altsech (1992) have shown that loud music, which has similar arousal properties to fast music, is perceived as longer in duration that quiet music. These studies provide some evidence that time tends to be over-estimated when people are exposed to music with higher arousal properties. Both of these studies were conducted under laboratory conditions, however, which raises questions about the external validity of the findings. In particular, it is questionable whether the same effects would be observed when people are passively rather than actively listening to music. The second hypothesis sought to explore these issues by testing the effects of music tempo in the naturalistic setting of the restaurant.

H2: Music tempo will influence perceived time spent in the restaurant. Individuals dining under the slow tempo condition will under-estimate time spent in the restaurant and individuals dining under the fast tempo condition will over-estimate time spent there.

An additional point of interest is the effect of music on money spent. There is, as yet, limited evidence of these effects. Milliman (1982) carried out research in a supermarket and reported a 38% increase in gross sales when the store played slow music rather than fast music. In a later study, Milliman (1986) found that, in the restaurant context, although there was no significant effect of music tempo on money spent on food, there was a marked difference when it came to the bar bill. Milliman found that groups dining under the slow music condition spent, on average, 40% more on drinks than groups dining under the fast tempo condition. The effect of music tempo on consumer spending is tested in the third hypothesis of this study:

H3: Music tempo will influence money the amount of money spent on drinks but will not influence the amount of money spent on food.

METHODOLOGY
Research Design

The service context chosen for the study was a restaurant. Restaurants face the same problem as other service organisations in that their offering is "perishable" and during quiet periods resources are under-used. On the other hand, the number of tables in the restaurant represents a finite capacity that is quickly filled during busy periods and increasing the turnover of tables is the only way to increase the number of customers. Therefore, regulating the flow of customers in this service context is of paramount importance. The fieldwork was carried out at a popular Italian restaurant in a relatively affluent area of Glasgow. One important feature of the restaurant was that it does not take reservations, which avoided the problem of diners' behaviour being influenced by awareness of the time allocated to a particular sitting.

Because the research aimed to investigate the causal relationship between music tempo and the behaviour of restaurant patrons, an experimental research design was adopted to test the research hypotheses. Two music tempo conditions were created based on the criteria used by Milliman (1986): music with 94 or more beats per minute was used for the fast tempo condition, while music with 72 or less beats per minute was used for the slow tempo condition. Data was gathered on Thursdays and Sundays, from customers entering the restaurant between seven and ten o'clock in the evening, and the music conditions were varied over the two days on consecutive weeks. These days were chosen (as opposed to the Friday and Saturday chosen by Milliman) in order to avoid respondents dining at peak times being pressurised by other diners waiting to be seated. Attempts were made to hold other environmental variables constant such that the music used for both conditions was Jazz (the type of music typically played in this restaurant), sung by Ella Fitzgerald, and other environmental features such as the loudness of the music, the temperature and the lighting were controlled.

Data collection

In order to test the hypotheses the following data was required:

- actual time spent at the restaurant
- perceived time spent at the restaurant
- amount of money spent on food and drinks

The data was gathered by means of observations and a self-completion questionnaire. The researcher recorded the time at which customers were seated and left their table [Respondents were only made aware that the researcher had made these observations after completing the questionnaire.] and the amount spent on food and drink. In addition, individuals were requested to complete a questionnaire just prior to their departure, noting a number of personal details and asking them to estimate time spent in the restaurant. The questionnaire also included a filter question that served to establish whether respondents were under any time constraints.

Sample

The two-seater tables in the restaurant were selected and only patrons sat at those tables over the data collection period were included in the research. The final sample (excluding 8 individuals who declined to participate in the research or who were under time pressures) consisted of 62 customers, 30 of whom had dined under the slow music condition and 32 who had dined under the fast music condition. The majority (77%) of the sample was dining at mixed-sex tables, while the remainder was dining at single-sex tables, which in all cases were two females dining together. For the most part, the respondents were repeat patrons (79%) but 21% were first time visitors to the restaurant.
RESULTS

This section presents the results of the analyses performed to test each of the research hypotheses. The first hypothesis was concerned with the effects of music tempo on time spent in the restaurant. The average time spent dining in the restaurant was 89 minutes (s.d. 27.65 minutes). To assess whether time spent dining differed depending on music tempo, the sample was divided on the basis of the two music tempo conditions. The descriptive statistics calculated for each condition are presented in Table 1.

TABLE 1 (/volumes/e04/04060t01.gif)

TIME SPENT DINING (/volumes/e04/04060t01.gif)

TABLE 2 (/volumes/e04/04060t02.gif)

PERCEPTION OF TIME SPENT DINING (/volumes/e04/04060t02.gif)

The figures show that customers dining under the slow music condition, on average, spent 13.56 minutes longer in the restaurant than individuals dining under the fast music condition. A t-test was performed to examine whether or not the difference between the two groups was significant. Despite relatively large standard deviations within each group, the t-test revealed that the difference was significant (t=1.98, d.f. 60, p<0.05). This indicates that the hypothesis can be accepted and that playing slow tempo music in a restaurant does result in customers taking a greater amount of time to dine.

The second hypothesis regarded individuals' perceptions of time. To investigate the effects of music on consumer perceptions of the duration of the service encounter, comparison was made between the actual time spent and perceptions of time spent in the restaurant. Specifically, the hypothesis proposed that customers dining under the slow music condition would underestimate time spent in the restaurant. Conversely time spent dining would be over-estimated by customers in the fast tempo condition. Before assessing how estimates of dining time differed across the two groups, consideration was given to the distribution of the responses for perceived minus actual time spent. This revealed four respondents, three dining under the fast tempo music condition and one under slow music condition whose estimations of the time spent dining were far in excess of the actual time spent dining. These respondents were excluded from the analysis performed to test hypothesis 2 on the grounds that their responses skewed the results. The descriptive statistics for the remaining respondents dining under the two music tempo conditions are presented in Table 2.

The results show that, on average, customers dining under the slow tempo condition underestimated the time spent in the restaurant, while those dining under the fast tempo condition slightly over-estimated time spent dining. To clarify these findings, Figure 1 illustrates the mean differences between perceived and actual spent dining for the two experimental conditions.

Despite finding a pattern of results that are in line with that proposed in the hypothesis the relatively high standard deviations demonstrate that estimates varied substantially within each group. A t-test was performed and revealed that the difference between groups' time estimates was not significant (t=1.20, d.f. 55, p>0.05). On the basis of these results the hypothesis regarding time perceptions is rejected, as there is insufficient evidence to suggest that music tempo affects restaurant customers time perceptions.

The final research hypothesis tested in this paper regards the effects of music tempo on amounts of money spent at the restaurant. Analyses conducted to test this hypothesis considered the total amount spent as well as the breakdown between money spent on food and
drink. The total amount spent, on average, was $24.82$ (s.d. $6.56$), which could be broken down in to $17.17$ (s.d. $4.01$) on food and $7.63$ (s.d. $3.75$) on drinks. Table 3 details how these figures varied across the two experimental groups.

The figures show a clear trend towards higher spending in the slow music tempo group. T-tests were performed on the figures for total spend and for the total food and drink breakdowns. The tests revealed a significant difference between total amount spent in the two groups ($t=-3.36$, d.f.$=60$, p$=0.01$). The difference in terms of the amount spent on food was also significant ($t=-3.51$, d.f.$=60$, p$=0.001$), as it was for the amount spent on drink ($t=-2.02$, d.f.$=60$, p$=0.05$). These results provide evidence on which to accept the hypothesis that music tempo affects the amount of money spent on drinks while dining at a restaurant, but to reject the hypothesis that it music does not influence the amount spent on food.

**DISCUSSION AND CONCLUSIONS**

The results of the analysis performed to test hypothesis 1 indicated that music tempo did have an effect on the amount of time that customers spent in the restaurant. This outcome is consistent with previous research into the effects of music tempo, both in the restaurant setting (Milliman, 1986) and in retail contexts (Milliman, 1982). The theoretical positions summarised at the beginning of the paper suggest two possible explanations for this effect: on the one hand, the outcome can be explained on the basis of the S-O-R models (Mehrabian and Russel, 1974; Berlyn, 1971). These models propose that the structural properties of music influence the level of arousal experienced by individuals and that the behavioural effects are a consequence of this arousal. Alternatively, the amount of time that customers spent in the restaurant may, as East (1997) suggests, be due to the direct effects of the music of behaviour, rather than as a consequence of its emotional arousal properties. There are clearly opportunities for further research to test the effects of music on time spent in restaurants and other service settings. In addition, research is required to build understanding of the mechanisms by which music influences behaviour.

**FIGURE 1** ([/volumes/e04/04061f01.gif](/volumes/e04/04061f01.gif))

**A COMPARISON OF PERCEIVED AND ACTUAL TIME SPENT DINING** ([/volumes/e04/04061f01.gif](/volumes/e04/04061f01.gif))

**TABLE 3** ([/volumes/e04/04062t03.gif](/volumes/e04/04062t03.gif))

**AMOUNT SPENT AT THE RESTAURANT** ([/volumes/e04/04062t03.gif](/volumes/e04/04062t03.gif))

With regard to hypothesis 2, there was some evidence to suggest that music tempo influenced time perceptions in the restaurant. The results were not, however, significant contrary to what has been found in previous studies (Kellaris and Kent, 1991). This discrepancy may be because, as suggested earlier, in cases where individuals are passively exposed to music, its effects are different than in experimental situations where they are actively listening to it. Alternatively, the contrasting findings might be due to problems of measurement in a naturalistic setting. In particular, one cannot be sure that people have not referred to their watches when getting ready to leave the restaurant or at other times throughout the meal. However, the results showed that respondents' estimates of time spent in the restaurant were frequently inaccurate. This indicates that measurement problems could only have been partly responsible for the lack of evidence of the effects of music tempo. There are likely to be additional influences, including social factors, the purpose of the event or affective states such as fatigue, that affect individuals' time perceptions in the restaurant setting and there is scope for further research into this domain.

Finally, the analyses performed to test hypothesis 3 revealed that when slow music was playing, customers spent significantly more on
food and drink than when fast music was playing. Here there is some discrepancy with Milliman's (1986) study, which only found music tempo to affect the amount spent on drinks. In the discussion of his results Milliman argues that it is reasonable to expect people to have a limit to what they eat but to continue to order more drinks. However, personal experience suggests that additional orders of both food (especially deserts) and drink are often placed when a party remains at a restaurant for any length of time. Closer scrutiny of bills and behaviour is necessary to gain a clearer understanding of differences in expenditure. The inconsistencies between the two studies are not necessarily indicative of poor reliability, but may be due to any one of a number of differences in research design (e.g. nature of the restaurants, the service systems, days of the week on which data was gathered).

There are various limitations of this research that should be borne in mind when interpreting the results reported here and that leave scope for further research to provide a more complete picture of the effects of music on behaviour in restaurants. First, data was only gathered from customers at one restaurant. This has implications for the generalisability of the findings, in particular, the results reported here cannot be considered to be generalisable to all restaurants when there is substantial variation between competitors in terms of the type of occasion for which they cater. Secondly, only individuals dining at tables for two were included in the research and their behaviour may differ substantially from customers dining in larger groups. Finally, the liking of fast versus slow music was not assessed in this research and this factor may be an important determinant of the behavioural effects observed in this research.

These findings have obvious implications for restaurant managers attempting to maximise income at both busy and quiet times of the day and week. At quiet times, playing music with a slow tempo, and with other low arousal structural components, can serve to retain people in the restaurant longer, and lead them to spend more money. At peak periods, however, when a faster turnover of tables is preferable, faster music can be played to reduce the average amount of time that customers spend at a table. One issue that is important to restaurant managers, that was not addressed in the present research but that is worthy of investigation before drawing conclusions regarding the best use of music in restaurant settings, is the consequences of musical manipulations on consumer satisfaction, image and ultimately repeat patronage.

REFERENCES


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