ELSEVIER

Journal of Business Research 54 (2001) 115–123

JOURNAL OF BUSINESS RESEARCH

Environmental background music and in-store selling

Jean-Charles Chebat[a,*], Claire Gélinas Chebat[b], Dominique Vaillant[a]

[a]HEC Montreal School of Management, Montreal, Quebec, Canada H3T 2A7
[b]Department of Linguistics, UQAM, Montreal, Quebec, Canada

Received 1 May 1999; accepted 1 May 1999

Abstract

Retailers use background music in order to enhance the atmosphere of their stores. The present study shows, as predicted by the proposed model, that the effects of music on attitudes toward the store, the salesperson, and the visit to the store are moderated by cognitive processes (number of thoughts and depth of information processing), whereas previous studies focused on emotional moderators. Soothing music (i.e., both pleasant and low arousing) is shown, as predicted, to increase cognitive activity when other cognitive stimulation is low (mainly when sales arguments are weak). However, retailers are warned that enhancing cognitive activity is no panacea since it is found here that higher cognitive activity is associated with lower attitudes. It is proposed that music *fit* with the store may explain such results. Music fit and cognitive processed triggered by store music are strongly suggested as avenues of store atmospherics research.

Keywords: Background music; In-store selling; Stores; Cognitive activity

1. Background music vs. salesclerk: competition or cooperation?

While background music is major element of retail atmospherics (e.g., Milliman, 1982, 1986; Yalch and Spangenberg, 1990; Baker et al., 1992), its effects on salesclerks' persuasiveness still remain unexplored: to what extent can music enhance or reduce salesclerks' persuasiveness within a store setting? Background music is a tool for increasing sales and enhancing positive attitudes toward the store.

We propose to empirically test a theoretical framework to explain how musical cues impact on cognitive processes: whereas music has been shown to stimulate emotions (e.g., Yalch and Spangenberg, 1990; Chebat et al., 1993, Dubé et al., 1995), we suggest that it also stimulates cognition; in fact, in our model, we propose that musical cues have cognitive effects mainly when other cognitive cues are either absent or significantly reduced.

The focus of this paper is the cognitive effects of music, more precisely on the relation between musical cues and attitudes (toward the store, the salesclerks, the product, . . .), which is assumed to be moderated by cognitive processes. The impact of music on attitudes is hypothesized to be strongest precisely under the very same music conditions for which the cognitive activity is the most intense. It is reasoned that music stimulates cognitive activity either when the consumers' involvement in the product is low or when the salespersons' arguments are weak. When consumers' attention is distracted from the sales encounter, cognitive activity is stimulated by cues other than those related to the service encounter; in such circumstances, musical cues may then be more salient. This theoretical proposition is based upon the literature reviewed below.

We shall first review the research on attentional effects of music: what type of music (in particular, music tempo) enhances cognitive activity and attention. We conclude the first part of the literature review with characteristics of music for which consumers are more likely to be cognitively stimulated. The second part of the literature review focuses on the cognitive models and leads us to predict the conditions under which musical cues could be most salient. Models like Elaboration Likelihood Model (ELM) (e.g., Petty and Cacioppo, 1986) and HMS (Chaiken, 1980) predict that peripheral cues, such as background music, have an impact on attitudes under low consumers' involvement; other models such as those developed by MacInnis and Jaworski (1989) or Greenwald and Leavitt (1984) consider

* Corresponding author. Tel.: +1-514-340-6846; fax: +1-514-340-6432.
E-mail address: jean-charles.chebat@hec.ca (J.-C. Chebat).

0148-2963/01/$ – see front matter
PII: S0148-2963(99)00089-2

that cognitive activity may also be stimulated by non-cognitive variables, particularly by arousing cues. We conclude from this second part of the literature review that musical arousing cues may enhance cognitive activity primarily when other cognitive cues are less salient.

A model is then proposed: basically, we suggest (1) that some musical arousing cues may more likely enhance cognitive activity and (2) that these cues impact more on attitudes when either product involvement is low or when salesperson's arguments are weak.

1.1. Music and cognitive activity and attention

1.1.1. What type of music stimulates cognitive activity?

1.1.1.1. Music and cognitive activity. Two competing theories may explain the cognitive effects of music: the Association Network Theory (Bower, 1981), and the theory developed by Hecker (1984). The first theory suggests that emotional states enhance the memory of (and attention to) events or facts *associated* with these emotions. Material encoded within a specific emotional context can be easily retrieved when the individual is in the same mood as when the information cues were encoded (e.g., Eifert et al., 1988; Eich and Metcalfe, 1989). Mood would then be a moderating variable of the memory processes (Blaney, 1986). Such a theory may explain the research results of Gorn (1982), Kellaris and Cox (1989), and Alpert and Alpert (1990): when consumers find themselves in a music-induced emotional state similar to the one where the cues were encoded, memorization is facilitated by such emotional retrieval processes.

The second theory, developed by Hecker (1984), proposes a radically different perspective: the most important characteristic of music is its ability to attract attention onto itself. This capacity to attract attention refers to the arousing potential of musical cues (Kroeber-Riel, 1979). Music may cancel learning from an educational program (Wakshlag et al., 1982); it can attract so much attention onto itself that the advertisement's central message is ignored (Macklin, 1988).

Kellaris et al. (1993) and MacInnis and Park (1991) made a major contribution to the understanding of the cognitive effects of music. They show that when music fits well in the advertisement, attention to music enhance cognitive measures (such as recall and recognition); and conversely, when the fit is low, attention to music reduces the cognitive scores.

These results by Kellaris et al. (1993) and MacInnis and Park (1991) contribute to our research in two ways: first, since the purpose of our study is to analyze the arousing effects of music, the effects of its fit with the salesperson's speech ought to be controlled for in order to avoid confounding effects; second, both studies show that, under certain conditions, music may enhance attention to the message if the fit is high and conversely.

1.2. Effects of music induced arousal on attention

Studies in music psychology show relevant but not convergent findings on the attentional effects of music. On one hand, Davenport (1974) and Corhan and Gounard (1976) found that the higher arousal, the deeper the attention. They both show that uncertain, discontinuous, complex, or random musical patterns stimulate the subjects' attention. These results are explained in terms of the quantity of information (in the sense of Attneave's (1959) "information theory") contained in the musical patterns.

On the other hand, Smith and Morris (1977), who compared the attentional effects of soothing vs. arousing music, found opposite results—that is, highly arousing music may hamper information processing and that soothing music helps concentration on the task. Borling (1981) examined the alpha brain waves (between 8 and 12 Hz) triggered by music-induced arousal. He found that soothing music can help the ability to focus attention (and to learn), because the production of alpha waves increases when subjects are exposed to soothing music (i.e., both low arousing and highly pleasant music).

The first conclusion from these conflicting studies is that the two theoretical propositions agree on a crucial point (i.e., music may have cognitive effects) but disagree on the optimal arousal level: whereas the first ones show that the higher the arousal, the higher the attentional waves, the second ones propose that under soothing music, the attention scores are highest.

The second conclusion is a methodological warning: the discrepancy between the two groups of studies may stem form the very concept of soothing music. As already pointed out (Dubé et al., 1995), soothing music is a combination of low arousal and high pleasure. Since music-induced pleasure has been shown to have significant cognitive effects (e.g., Chebat et al., 1993), it is hard to say if the effects of soothing music found in the music psychology literature are due to its high pleasure component or to its low arousal component. We then conclude that, in a study of the cognitive effects of music-induced arousal, the level of pleasure should be controlled for. Consequently, since pleasantness and familiarity are highly related (Bradley, 1971; McSweeney and Bierley, 1984), familiarity with music pieces should also be controlled for.

The third conclusion is in the same vein: if pleasure is not controlled for, very different patterns of the music–cognition relationship can be obtained; in the study by Dubé et al. (1995), the analysis of cognitive responses to no music-vs.-low-vs.-moderate-vs.-high arousal induced by music excerpts shows that in the case of highly pleasant music, cognitive activity (measured in terms of number of cognitive responses) is the highest for both slow and fast tempo. On the contrary, under unpleasant music conditions, the cognitive activity is lowest for both slow and fast tempo. In the studies reviewed in the field of music psychology (e.g., Corhan and Gounard, 1976;

Smith and Morris, 1977), it is not clear if music pleasantness was controlled for. Because of the ambiguous nature of soothing music, we can hardly conclude if slow tempo enhances more cognitive activity than fast tempo.

The final conclusion from the literature is that even if pleasantness was not controlled for in the Borling (1981) study, it shows the direct effects of music on subjects' cognitive activity. Our second hypothesis stems from his findings: the highest cognitive activity is generated by slow tempo music. The idea that the highest cognitive activity would be generated at low (or moderate) levels of arousal, as suggested by Borling (1981), is found in the consumer behavior literature. Mano (1992, 1994) shows that arousal directly influences attention and that an increase in arousal produces a narrowing of attention. When arousal passes this threshold, individuals tend to focus their attention on a more limited number of objects. Sanbonmatsu and Kardes (1988) suggest that highly aroused consumers are more likely to use simpler decision rules because their capacity to process information is reduced. Their findings are generally indicative that high arousal reduces the amount of available processing capacity.

In a selling interaction between customers and salespersons, the focus of such an encounter is the sales pitch arguments (not music), if the arguments happen to be related to a product important to the customers or if the sales pitch arguments are convincing. Background music can help consumers enhance their attention to the salesperson, as shown in the music psychology studies we reviewed above; it can also distract the customers from the sales pitch. This idea is developed in Section 2 of our theoretical development.

2. When the attentional focus drifts away from the sales speech

2.1. Effects of product involvement

The ELM developed by Petty and Cacioppo (1986, 1983, 1979) proposes that either of the two routes of persuasion are possible: under high involvement, where the strength of message arguments is the main persuasive element, or under low involvement, where peripheral cues play a major role. We suggest that music-induced arousal impacts on cognitive activity mostly under low involvement since background music is definitely a "peripheral cue."

We propose that such processes triggered by music cues should be similar to those shown in the case of voice cues. Gélinas-Chebat and Chebat (1996) distinguish the effects of voice under low vs. high product involvement in an advertising context. They find that voice intensity affects source credibility more under low than under high involvement conditions, as expected from ELM. Voice intensity is shown to increase attention under low involvement, whereas under high involvement, "the recipient's attention is shifted between the content of the message, which intrinsically requires a high amount of cognitive activity, and the voice intensity" (p. 254).

We suggest that music-induced arousal plays a role similar to that of voice intensity: it enhances attention when involvement is low; however, music hinders attention under high involvement because consumers' attention is split between the salesperson and the music.

2.2. Effects of weak arguments on attention

Very surprisingly, very few studies have investigated the cognitive impact of arguments strength. The focus of the existing studies was the effects of arguments strength on attitudes (e.g., Petty, Cacioppo and Schumann, 1983; Chebat et al., 1990) not on cognitive activity. Chebat and Lavallée (1995) studied the impact of arguments strength on the information processing of advertisements. They found that "arguments strength affects information processing mostly under high involvement" (p. 85). It is reasoned that consumers are distracted from the sales arguments and turn their attention toward their own thoughts; consequently, as predicted by Mick (1992), the information processing becomes deeper. Depth of information processing is understood here in terms of Mick's (1992) typology: the deep thoughts are more related to personal matters, emotions, and memories. Mick (1992) found that the relation between attitudes toward the ad and toward the product are all the stronger if the information processing is deeper.

H1a. *The relation between music tempo-induced arousal and cognitive activity is significantly stronger when arguments are weak rather than strong.*

H1b. *The relation between music tempo-induced arousal and cognitive activity is significantly stronger when involvement is low rather than high.*

H2. *The effects of music tempo on cognitive activity are strongest under soothing (low arousal) music than under no-vs.-moderate tempo-vs.-fast tempo.*

H3. *Under soothing music (slow tempo), the effects of cognitive activity on the attitudes are stronger than under other music conditions.*

3. Methodology

3.1. Overview of the study

Three variables were manipulated in a 4 × 2 × 2 factorial design experiment: four levels of music tempo induced arousal × two levels of product involvement × two levels of arguments strength. Variations in levels of

arousal were manipulated with classical music excerpts having different tempos and affective responses. Argument strength and product involvement were also pretested (see Section 3.3).

3.2. Subjects

A total 593 undergraduate business students from two Eastern Canadian universities participated in the experiment. Five hundred and thirty-six questionnaires were completed and used. Subjects were assigned randomly to each of the 16 experimental conditions; in average, subjects for each cell was $n = 37$.

3.3. Pre-tests

3.3.1. Pre-test of music induced arousal

Dubé et al. (1995) made a meticulous choice of musical pieces. We used three of their musical pieces in order to have three significantly different levels of arousal and same level of pleasure. In a first step, 15 subjects from the same university as those of our study (eight females and seven males) were exposed to 54 musical excerpts, which they rated in terms of both arousal and pleasure using the Affect Grid designed by Russel et al. (1989). The Affect Grid presents a good validity and reliability and is recommended when repeated measures are necessary (Holbrook and Gardner, 1993). Then, the excerpts were classified in three equal categories of tempos (i.e., slow-vs.-moderate-vs.-fast) by music experts. The average ratings on the arousal dimension were 2.6, 5.4, and 8.0, respectively for low, moderate, and high arousal levels ($F[2,37] = 52.88$, $p < 0.001$). The level of familiarity did not vary across conditions (means = 2.6, 2.3, 3.7; $p > 0.20$). We selected three musical excerpts from the original 54: the first movement of the horn concerto #3 in E flat major (K447) by Mozart; the Brandenburg concerto #6 in F major BMV 1047, second movement by J.-S. Bach; the oboe concerto in C major K314, third movement by Mozart. On one hand, the three musical excerpts were rated as highly and similarly pleasurable (6.17, 7.38, and 7.64, respectively) on a 9-point scale; on the other hand, the three excerpts chosen were quite different in terms of arousal (2.58, 5.86, and 7.64, respectively)—in other words, tempo-induced arousal, but not pleasure, was manipulated.

3.4. Pre-test of service involvement

Thirty students were administered the Laurent and Kapferer (1985) involvement profile questionnaire to assess the level of involvement perceived in two travel services: a $ CAN 149 trip from Montreal to New York vs. a $ CAN 2500 trip from Montreal to Europe. The "Europe" trip is significantly more involving than the "New York" counterpart (all $F > 3.97$; $p < 0.001$).

3.5. Pre-test of arguments strength

A group of 30 students was exposed to a list of 50 arguments related to the two trips (New York vs. Europe) designed as either very weak or very strong. Respondents were asked to assess the strength of each of the arguments from "very weak" to "very strong" on a 7-point Likert scale. The 10 strongest and 10 weakest arguments were kept for further analyses. In the case of the *New York* trip, the average strength of the 10 strongest arguments is 5.81 vs. 2.29 for the weakest arguments ($t = 22.22$; $p < 0.001$); similarly, for the *Europe* trip, the average scores of the two groups were significantly different (5.10 vs. 3.17; $t = 15.54$; $p < 0.001$).

3.6. Videos

The research procedure consisted of a simulation carried out as realistically as possible and presented in the form of videos showing the interaction between a travel agent and two clients in a simulated travel agency office. The three characters are professional actors. Two of them perform the role of a young couple visiting a travel agency to get information about a trip outside Canada. Videos showing the experimental conditions were taped under the directorship of a film professor at an Eastern Canadian university who was assisted by cameramen and lighting students from the Communications Department at the same university. The scripts were written by a research team and subsequently revised by a theater professor. Each of the four videos had a different selected musical extract as sound background. The subjects were instructed to regard what they were watching and hearing as what they would have watched and heard if they had been in the agency. Such a method has been widely used in the field of service research (e.g., Baker et al., 1992; Chebat et al., 1993 and validated experimentally by Bateson and Hui (1992). After watching the videos, the subjects were asked to fill out a questionnaire on the attitudes toward the service, the salesperson, and the intent to buy, and to recommend the service.

4. Dependent measures

4.1. Cognitive activity

Cognitive activity was measured in two ways: first, the *number* of cognitive responses to the sales encounter; second, the *depth* of information processing. The section of our questionnaire assessing the level of information processing was formulated into a single open-ended question. The respondents were asked to write down everything they had thought and imagined while watching the video. The depth of processing by the subjects was assessed by two

graduate students in linguistics who categorized the responses by following the reference points listed below, which reflects the hierarchy of information processing levels developed by MacInnis and Jaworski (1989). The six levels are listed in Appendix A.

If the cognitive responses showed that the subject had attained several different levels (e.g., level one is attained twice and level three once), the judges had to indicate all the levels that were attained. This task was first accomplished individually by each of the judges. The codification of the two judges turned out to be identical in 82% of the cases. The cases not decided unanimously were resolved by two other independent judges. The percentage of respondents at each level is as follows—level 1: 7%; level 2: 16%; level 3: 36%; level 4: 19%, level 5: 19%, level 6: 3%. Subjects produced an average of 3.91 cognitive responses with a standard deviation of 2.32. The precise procedure is detailed in Appendix A.

4.2. Attitudes

Nine 7-point scales assessed the level of satisfaction with the service offered (i.e., the two trips to New York or Europe), the employee, and the visit. A maximum likelihood factor analysis shows three factors: recommendation of the service to a friend (eigenvalue = 4.5; 50% of explained variance), attitudes toward the employee (eigenvalue = 1.4; 16% of variance explained), and satisfaction with the visit (eigenvalue = 1.02; 10% of variance explained). The respective Cronbach's alphas are: 0.94, 0.93, 0.81.

5. Manipulation checks

Kellaris and Kent (1992) warned that "when different pieces of music are used to manipulate a musical variable, musical properties are confounded, making it difficult to isolate specific caused antecedents" (p. 395). We checked to make sure that *only music-induced arousal* was manipulated, i.e. neither music-induced pleasure nor dominance nor familiarity with the music excerpt, nor music fit with the commercial sales pitch.

5.1. Music familiarity

Music excerpts were scoring very similarly low across all experimental conditions (from 2.04 to 2.70; all $F < 1.11$; $p > 0.30$).

5.2. Music fit

Similarly, music fit (measured by two scales) did not vary across the experimental conditions ($F < 1.58$; $p > 0.16$); note that fit was low in general (from 2.30 to 3.05) on a 7-point scale.

5.3. Music arousal

As expected from the pre-test, music-induced arousal factor scores vary very significantly with the music manipulation ($F = 7.61$; $p = 0.001$); it is associated neither with arguments strength ($F = 0.39$; $p > 0.5$) nor with involvement ($F = 0.70$; $p > 0.40$). The arousal levels induced by the musical excerpts are as follows: the factor scores of arousal (derived from the Pleasure–Arousal–Dominance (PAD) scales developed by Mehrabian and Russell, 1974) are the following: for slow tempo = −0.273; for moderate tempo = − 0.007; for high tempo = + 0.234.

5.4. Music induced dominance

Dominance, the third factor of the PAD scale designed by Mehrabian and Russell (1974) is shown to be controlled for throughout the 16 experimental conditions. Neither music manipulations ($F = 1.33$), nor arguments strength, ($F = 0.23$) nor involvement ($F = 0.58$) has significant effects on dominance factor scores (all $p > 0.27$).

5.5. Music-induced pleasure

As expected, pleasure induced by music varies neither with the music tempo manipulations ($F = 1.16$), nor with the arguments strength ($F = 0.29$), nor the product involvement ($F = 0.03$); all $p > 0.32$.

5.6. Ecological validity

Four 7-point Likert scales (Cronbach's alpha = 0.80) assessed the ecological validity: the video "reflects the reality," "is similar to personal experiences," "is realistic," "gives the impression of being in a real travel agency." A series of ANOVAs showed that ecological validity did not vary across experimental conditions (all $p > 0.45$).

6. Results

A MANOVA—where depth of information processing and number of thoughts are the two dependent variables, and where music tempo and arguments strength are the independent variables—is performed. It shows significant interactive effects of the two independent variables ($F = 3{,}56$; $p = 0.001$) Two additional series of MANOVAS are performed to pinpoint if music affects cognitive activity under weak vs. strong arguments.

A MANOVA—the dependent variables of which are the depth of information processing and the number of thoughts, and the independent variable is the music tempo —was performed under two conditions: weak vs. strong arguments. Under weak arguments, music impacts significantly on both the number of thoughts ($F = 3{,}56$; $p = 0.01$) and the depth of information processing ($F = 3{,}39$; $p = 0.02$). Under strong

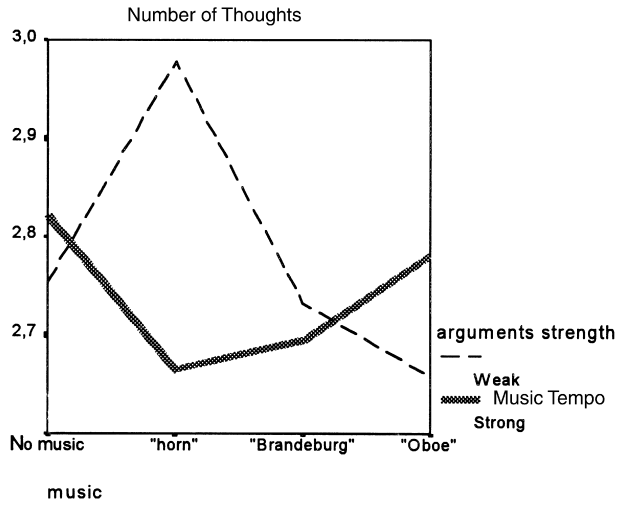

Fig. 1. Effects of music tempo on the number of thoughts under weak vs. strong arguments.

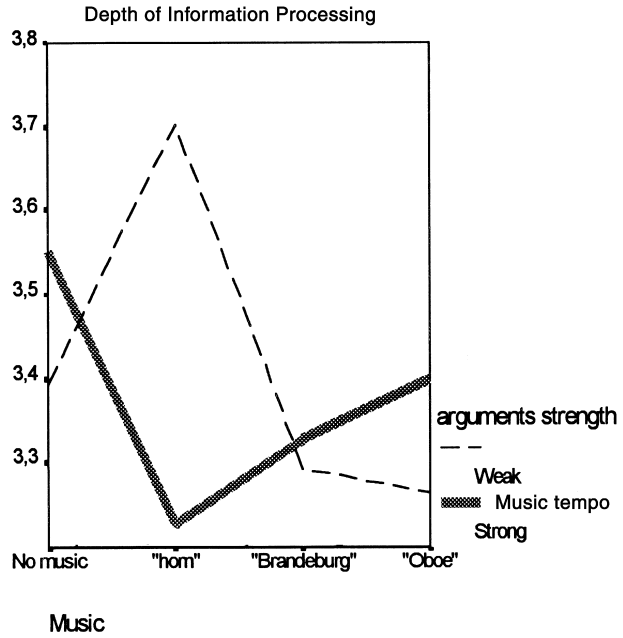

Fig. 2. Effects of music tempo on the depth of information processing under weak vs. strong arguments.

arguments, the relation is not significant for the number of thoughts ($F = 0.87$l; $p = 0.45$) and the depth of information processing (F = 1.22; p = 0.30). *H1a is supported*.

The same procedure was used to assess the moderating effects of product involvement; product involvement has no moderating effects since the interactive effects of music and involvement are not significant ($F = 1.10$; $p = 0.301$) H1b is rejected.

Since involvement does not have the moderating effects of music tempo on the cognitive variables, the analyses related to H2 and H3 are limited to the potential moderating effects of arguments on thoughts.

Since weak arguments enhance cognitive activity, we now have to verify under which music condition the cognitive activity is at its highest: H2 predicts that it is under the slow tempo condition. A series of ANOVAs was performed on the depth of information processing and the number of thoughts.

Slow tempo enhances both cognitive indicators significantly under weak arguments rather than under strong arguments: $F = 4.97$; $p = 0.03$ for the number of thoughts; $F = 6.23$; $p = 0.01$ for the depth of information processing. In all other music conditions, the cognitive activity does *not* vary with arguments strength (all $F < 0.36$; $p > 0.50$). See Figs. 1 and 2. *H2 is supported*.

The factor scores of the three factors are entered in a series of canonical regressions as dependent variables, whereas "depth of information" processing and "number of thoughts" are the independent variables. Such an analysis is performed for each of the four music tempo conditions.

Under weak arguments conditions,[1] depth of information processing (not the number of thoughts) impacts on attitudes only under slow tempo: it impacts on both the attitudes toward the employee ($F = 5.21$; $p = 0.03$) and the global assessment of the visit ($F = 3.26$; $p = 0.07$). All other $F < 1.86$ (n.s.).

A series of regression analyses shows the *direction* of the effects of depth of information processing on the three attitudinal factors. Depth of information processing has significantly different effects on the three attitudes: its impact is significant under *slow* tempo on the attitudes toward the employees ($F = 11.60$; $p < 0.001$) and the assessment of the visit ($F = 4.61$; $p \leq 0.03$). Its impact is not significant in all other conditions (all $F < 0.78$; $p > 0.23$). *H3 is supported*.

Note also that the all significant betas are negative: the deeper the information processing, the worse the assessment of the visit and the attitudes toward the employees (respective betas = −0.28 and −0.35.

7. Discussion

(1) Most tenets of our proposed model are supported. Whereas previous atmospheric studies stressed the emotional effects of music, the present findings show that music affects the attitudes through cognitive process. In addition, since the emotional dimensions of music other than arousal (i.e., pleasure and dominance) are controlled for in this experiment, since the "fit" of music and its familiarity are also controlled,[2] only the arousal dimension is manipulated here through a variation of tempo. Tempo is reasoned to be playing a stimulating role: following Borling's (1981) findings, we

[1] Under strong arguments, all $F < 0.86$ and $p > 0.32$.

[2] The musical genre is also controlled for since only classical music are used in the experiment.

suggest that slow music tempo enhances brain alpha waves, which in turn, stimulates cognitive activity. However, these processes are likely to be fragile in the sense that they occur mostly when other sources cognitive stimulation are reduced.

The cognitive activity is triggered by soothing music, which seems to be the optimal level of arousal. Our findings show that it is not the highest level of arousal, which enhances cognitive activity, but a low level of arousal. Whereas this finding contradicts the proposition that high levels of emotions enhance cognitive activity such as memorization and learning (Bower 1981), it rather supports the views of Hecker (1984): cognitive effects of music stem from its capacity to attract attention; beyond a certain threshold, it attracts attention onto itself and away from the salesperson's arguments. Slow tempo enhances the cognitive responses to the sales speech and to the sales encounter. This explanation is coherent with the attentional models developed by music psychologists Smith and Morris (1977) and with their results.

(2) Music tempo plays a role similar to that of the voice intensity (Gélinas-Chebat and Chebat, 1996). It arouses attention when other cognitive cues are either absent or reduced. We predicted that such effects should be the strongest under either weak arguments or under low involvement. Whereas the hypothesis related to weak arguments proves to be supported, the other hypothesis, which was related to low involvement was rejected. We reason that our manipulation of involvement may have been too simplistic in the sense that we basically manipulated the financial cost, and, in turn, the financial risk. However, the respondents, i.e. university students, may have considered a trip to New York to involve a pleasure score as high as that of a trip to Europe and consequently, enhance as much interest and cognitive activity.

(3) Confirming the findings of Smith and Morris (1977) and Borling (1981), we found that highly arousing music hampers cognitive activity. This negative impact of highly-arousing music is reinforced by the fact that (classical) music pieces have a *low fit* with the commercial message. When the fit between music and the commercial message is low, as it is in this case, MacInnis and Park (1991) show that music, which draws attention onto itself, reduces vigilance and information processing and, in turn, recall. In the present study, the attention to fast tempo music is significantly higher than the attention to the low tempo music (3.07 vs. 2.31; $F = 4.42$; $p < 0.01$). Since the fast tempo musical excerpt does not fit with the commercial context and since it attracts attention to itself, it reduces the cognitive activity, which is in agreement with the findings of MacInnis and Park (1991). Conversely, the slow tempo music does not attract attention to itself; this allows it to enhance cognitive activity (or at least not hinder it), which is a positive effect since it does not fit either with the commercial context.

(4) Deeper cognitive activity, as suggested by Mick (1992), strengthens the relation between the stimulating cues (i.e., music in our case; ads in Mick's case) and attitudes. Note that our results show that the depth of cognitive activity, *not its intensity* (i.e., number of cognitive response), moderates the effects of music on attitudes. This result is central in this study: if the cognitive activity is shallow, the impact of music is significantly less than if the cognitive activity is deep. In other words, the music has to allow respondents to retrieve personal memories. The cognitive moderating effects stem from its connotative and evocative power. The deeper the cognitive response, the greater the impact of music on attitudes. If music facilitates the retrieval of personal memories, the information memorized in these files "contaminate" the perception of the salesperson, his/her sales pitch and the sales encounter.

In other words, what really matters in store music is its evocative power—memories related to the music. For instance, nostalgia is not mere emotions but also a set of informational files. When brought to short-term memory, the information contained in these files is put in relation with the incoming information, that is, the sales pitch, the salesperson's non-verbal cues, the atmospheric variables of the store. This leads us to strongly suggest another avenue of research in atmospherics music, and maybe other atmospheric cues may be studied not only in terms of emotions but also in terms of connotative effects, i.e. what is evoked by musical pieces. The same piece of music may evoke very different things to persons of the same culture and same social class but of different generations: music's evocative power is an important element of segmentation of store shoppers.

(5) The very fact of enhancing cognitive activity through music is not necessarily a panacea. Our findings show that the deeper the cognitive activity, the more negative the attitudes toward the employee and toward the visit. We reason that, in the case of this study, the "fit" of the music excerpts is constant but rather low. As shown in previous studies on the effects of music fit (MacInnis and Park 1991; Kellaris et al., 1993), if the fit (or congruence) is high between music and the advertised products, it favors positive attitudes toward the product: and conversely. Since the fit is low, when music triggers a deep cognitive activity, the general feeling of an unbalance and disharmony may permeate all the perceptions and attitudes. In particular, if the music is pleasant but does not fit in the sales situation, consumers compare the files retrieved by a pleasant music (and likely positive memories) with what they are exposed to (i.e., the sales person, his sales pitch); since music does not fit with the situation, the impression of dissonance makes the salesperson and his/her arguments all the worse. From an attribution perspective, the Jones and Davis (1965) theory of corresponding inferences would predict the following: if consumers perceive musical cues and the sales pitch as excessively discrepant with each other, they would infer a lack of authenticity; for instance, they may infer that classical music is a sign of "high class" status, which does

not fit with the furniture of the travel agency (they pretend to be something they are not).

8. Conclusion

Music may attract attention onto itself and away from the salesperson's sales pitch especially if some conditions are present: the sales pitch arguments are weak; the music tempo is slow. In such cases, music helps consumers retrieve deep thoughts and then permeate the perception of the persons, verbal and non-verbal cues, store environment. Retailers using background music in their stores favor the generation of some types of cognitive responses, which may negatively influence the attitudes toward the employee and the store if the music does not fit in the sales encounter.

Pleasant music is not sufficient to help salespersons; it may even hinder their persuasive efforts if the music is considered as not fitting in the sales encounter. Music fit is certainly as important a research area in atmospherics as music pleasure or as music arousal. The emotions generated by music may be positive and the cognitive effects may be null or negative. Store atmospherics researchers should turn their focus toward cognitive effects of the environmental variables. What is shown for music here may likely prove to be also shown for odors or colors or lighting.

Acknowledgments

The first two authors (JC Chebat and C Gélinas-Chebat) gratefully acknowledge the research grant received from the Social Sciences Research Council of Canada.

Appendix A. Coding Procedure

Two MA students in linguistics, supervised by one of the main authors, analyzed each cognitive answer. The depth of cognitive response and the number of arguments elaborated were coded.

In the first step, each subject's response was divided in *enunciation units*. The objective of this step was to dichotomize the corpus: the two judges classified a cognitive response as having either a ''message orientation'' (it then belongs to levels one, two, or three) or a ''receiver's orientation'' (it then belongs to levels four, five, or six). In a second step, the ''sales pitch orientation'' cognitive responses (i.e., those *replicating* the salesperson's arguments) were associated to level one or two, the ''content'' were associated to level three or four and ''actor'' as level five or six. Table A represents the cognitive data analysis framework:

Table A
Cognitive data analysis framework

Answer's focus	Cognitive levels	Response orientation
1: Feature analysis	Context	Message orientation
2: Basic categorization		
3: Meaning analysis	Content	
4: Information integration		Receiver orientation
5: Role-taking	Actor	
6: Constructive processes		

(1) Level one is clearly associated to secondary task and questionnaires revealing answers like ''no idea,'' ''not interested'' were coding level one except rejected questionnaires (blanks, pencil-stretch). Answers regarding the context, i.e. video, characters, atmosphere, etc. (e.g., ''she looks so nice,'' ''she is not competent,'' ''the decor is really shabby'') were classify as second level.

(2) The levels three and four are oriented on the content of the video (e.g., ''not enough explanations,'' ''she shouldn't do this job''). The subjects usually remember arguments of the message or state any inferences (e.g., ''It's not expensive for a trip like that,'' ''I feel like going to New York''). Linguistic cues such as pronouns were essential to discriminate the level three by opposition of the level four: he/she-vs.-I/me/mine, allow to discriminate clearly between the two levels. A ''She considers her customers as idiots . . .'' belongs to level three while ''I feel she regards *me* as an idiot . . .'' belongs to level four.

(3) Answers coded as levels five and six are not oriented on the video nor on the content of the pitch but on the receiver's as the focus of her—her own thought. At level five, answers are formulated as an action that the receiver had would like to do (e.g., ''I wish I could afford it''), i.e. actions desired or rejected by the respondent; at level six, on the contrary, the receiver formulated not only a desire but a fact retrieved from his/her own memory (e.g., ''When I went to Italy . . .''), or makes a free use of his imagination to create situations in which he/she is the main actor (e.g., when referring to the salesgirl: ''I would like to spend some days in Hawaii with this girl . . .'').

Each questionnaire was individually analyzed, then results in two stages were compared by the two judges. First, the identification of enunciation units, then after agreement is reached, cognitive levels reach. All the results were compiled (inter judge agreement was around 85%). In non-consensual cases, the second author made the final decision.

References

Alpert JI, Alpert M. Music influences on mood and purchase intentions. Psychol Mark 1990;7(2):109–33.

Attneave F. Applications of Information Theory to Psychology. New York: Holt Rinehart Winston, 1959.

Baker J, Levy M, Grewal D. An experimental approach to making retail store environmental decisions. J Retailing 1992;68(4):445–60.

Bateson JEG, Hui MK. The ecological validity of photographic slides and videotapes in simulating the service setting. J Consum Res 1992;19: 271–81.

Blaney PH. Affect and memory: a review. Psychol Bull 1986;99:29–246.

Borling JE. The effects of sedative music on alpha rhythms and focused attention in high-creative and low-creative subjects. J Music Ther 1981;28(2):101–8.

Bower G. Mood and memory. Am Psychol 1981;36:129–48.

Bradley IL. Repetition as a factor in the development of musical preference. J Res Music Educ 1971;19:295–8.

Chaiken S. Heuristic versus systematic information processing and the use of source versus message cues in persuasion. J Pers Soc Psychol 1980;39(5):752–66.

Chebat J-C, Filiatrault P, Perrien J. Limits of credibility. J Soc Psychol 1990;130(2):157–67.

Chebat J-C, Gélinas-Chebat C, Filiatrault P. Interactive effects of musical and visual cues on time perception: an application to waiting lines in banks. Percept Mot Skills 1993;77:995–1020.

Chebat J-C, Lavallée C. Effects of involvement, arguments strength and product prior knowledge on advertising information processing. In: Engelland BT, Smart DT, editors. Marketing: Foundations for a Changing World 1995;81–7.

Corhan CM, Gounard BR. Types of music, schedules of background stimulation, and visual vigilance performance. Percept Mot Skills 1976;42:662.

Davenport WG. Arousal theory and vigilance: schedules for background stimulation. J Gen Psychol 1974;91:51–9.

Dubé L, Chebat J-C, Morin S. The effects of background music on consumers' desire to affiliate on buyer–seller interactions. Psychol Mark (July) 1995;12(4):305–19.

Eich E, Metcalfe J. Mood dependent memory for internal versus external events. J Exp Psychol 1989;15:443–55.

Eifert G, Craill L, Corey E, O'Connor C. Affect modification through evaluative conditioning with music. Behav Res Ther 1988;26:321–30.

Gélinas-Chebat C, Chebat J-C. Voice and advertising: effects of intonation and intensity on source credibility, attitudes and intent to buy. Percept Mot Skills 1996;83:243–62.

Gorn GJ. The effects of music in advertising on choice behavior: a classical conditioning approach. J Mark 1982;46:94–101.

Greenwald AG, Leavitt C. Audience involvement in advertising: four levels. J Consum Res. 1984;11(June):581–92.

Hecker S. Music for advertising effect. Psychol Mark 1984;1(Spring–Summer):3–8.

Holbrook MB, Gardner MP. An approach to investigating the emotional determinants of consumption durations: why people consume as long as they consume. J Consum Psychol 1993;2(2):123–42.

Jones EE, Davis KE. From acts to dispositions: the attribution process in person perception. In: Berkowitz L, editor. Advances in Experimental Psychology (Vol. 2). New York: Academy Press, 1965. pp. 219–66.

Kellaris JJ, Cox AD. The effects of background music in advertising: a reassessment. J Consum Res 1989;16:113–8.

Kellaris JJ, Cox AD, Cox D. The effect of background music on ad processing: a contingency explanation. J Mark 1993;57(October):114–25.

Kellaris JJ, Kent RJ. The influence of music on consumers' temporal perception: does time fly when you're having fun? J Consum Psychol 1992;365–76.

Kroeber-Riel W. Activation research: psychobiological approaches in consumer research. J Consum Res 1979;5(March):240–50.

Laurent G, Kapferer JN. Measuring consumer involvement profiles. J Mark Res 1985;22(February):41–53.

MacInnis DJ, Park WC. The differential role of characteristics of music on high and low-involvement consumers' processing of ads. J Consum Res 1991;18(September):161–73.

MacInnis DJ, Jaworski BJ. Information processing from advertisements: toward an integrative framework. J Mark 1989;53(October):1–23.

Mano H. Judgments under distress: assessing the role of unpleasantness and arousal in judgment formation. Organ Behav Hum Decis Process 1992;52:216–45.

Mano H. Risk-taking, framing effects, and affect. Organ Behav Hum Decis Process 1994;57:38–58.

Macklin CM. The relationship between music in advertising and children's responses: an experimental investigation. In: Hecker S, Stewart DW, editors. Nonverbal Communication Advertising. Lexington, MA: D.C. Heath, 1988. pp. 225–52.

McSweeney FK, Bierley C. Recent developments in classical conditioning. J Consum Res 1984;11:619–31.

Mehrabian A, Russell J. An approach to environmental psychology. Cambridge, MA: MIT Press, 1974.

Mick DG. Levels of subjective comprehension in advertising processing and their relations to ad perceptions. J Consum Res 1992;18(March):411–24.

Milliman RE. Using background music to affect the behavior of supermarket shoppers. J Mark 1982;46(Summer):86–91.

Milliman RE. The influence of background music on the behavior of restaurant patrons. J Consum Res 1986;13(September):286–9.

Petty RE, Cacioppo JT. Communication and Persuasion: Central and Peripheral Routes to Attitude Change. Springer Series in Social Psychology. New York: Springer-Verlag, 1986.

Petty RE, Cacioppo JT. Central and peripheral routes to persuasion: application to advertising. In: Percy L, Woodside AG, editors. Advertising and Consumer Psychology. Lexington, MA: Lexington Books, 1983. pp. 2–3.

Petty RE, Cacioppo JT. Issue involvement can increase or decrease persuasion by enhancing message relevant cognitive responses. J Pers Soc Psychol 1979;37(10):1915–26.

Petty RE, Cacioppo JT, Schumann D. Central and peripheral routes to advertising effectiveness: the moderating role of involvement. J Consum Res 1983;10:135–46.

Sanbonmatsu DM, Kardes FR. The effects of physiological arousal on information processing and persuasion. J Consum Res 1988;15:335–44.

Smith CA, Morris LW. Differential effects of stimulative and sedative music on anxiety, concentration, and performance. Psychol Rep 1977;41:1047–53.

Wakshlag JJ, Reitz RJ, Zillman D. Selective exposure and acquisition of information from educational television programs as a function of appeal and tempo of background music. J Educ Psychol 1982;74(5):666–77.

Yalch RF, Spangenberg E. Effects of store music on shopping behavior. J Serv Mark 1990;4:10:31–9.